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Sir Michael Bellew Cappe
with the Author's best Regards.
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Military-Medical Reports;

CONTAINING

PATHOLOGICAL AND PRACTICAL

OBSERVATIONS

ILLUSTRATING THE

DISEASES OF WARM CLIMATES.

BY

JAMES M'CABE, M.D.

AUTHOR OF "OBSERVATIONS ON THE CHELTENHAM WATERS," &c, &c.

"Cum in interioribus partibus et dolores et morborum varia genera nascantur, neminem putant his adhibere posse remedia quæ ipse ignoret. Necessarium ergo esse, incidere corpora mortuorum eorumque viscera atque intestina scrutari."

Celsus de Medicina.

Cheltenham:

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1825.

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TO

SIR JAMES M'GRIGOR, M.D.

COMMANDER OF THE TOWER AND SWORD,

FELLOW OF THE ROYAL SOCIETIES OF LONDON AND EDINBURGH,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH,

HONORARY FELLOW OF THE ROYAL COLLEGE OF SURGEONS OF IRELAND,

PHYSICIAN EXTRAORDINARY TO THE KING,

AND DIRECTOR GENERAL OF THE ARMY MEDICAL DEPARTMENT:

THE FOLLOWING PAGES ARE

RESPECTFULLY INSCRIBED,

BY HIS MOST OBLIGED AND OBEDIENT HUMBLE SERVANT,

THE AUTHOR.

30, *Gyde's Terrace, Cheltenham,*
June 1*st*, 1825.

PREFACE.

THE effects produced on the human body by the alternations of temperature is a subject of deep interest to the physician. The fevers, liver complaints, and other diseases which are occasioned by the excitement of a tropical climate, produce changes in the system that remain long after these diseases shall have been to all appearance removed. The engorgements of the vital organs, which are found to accompany tropical diseases, give rise to organic debility with its long train of consequences, or by permanently injuring organic structure, may occasion functional derangement. A knowledge of these physical changes is of the utmost importance in the treatment of the original diseases, but is still more necessary in the treatment of their various and complicated sequelæ. This knowledge is, pathology, and is the only real and scientific

basis on which to found the principles of treatment. To obtain this knowledge however is difficult, as it is neither to be acquired theoretically from the professor's chair, nor practically at the bedside of the patient; although a previous knowledge of both theory and practice is absolutely necessary to qualify us for the investigation. To these previous requisites or qualifications must be added, an opportunity of examining by dissection the changes that have taken place in the organs of individuals who have fallen victims to these diseases, and to the progress and symptoms of whose cases we had carefully attended up to the period of their fatal termination. The history of cases and detail of symptoms will not teach us pathology, unless we are afterwards enabled to ascertain by dissection the physical changes that have been produced by the disease; nor will dissection alone afford us that information, without a previous knowledge of the history of the case.

In the year 1812, the Author of the following Reports, &c. joined the army on the West-India

station as a medical officer, and during a residence of five years in that climate, he omitted no opportunity of ascertaining by dissection in the military hospitals the effects produced on the human body by tropical heats and tropical diseases. In the several Reports will be found faithfully recorded the histories of cases which occurred under his own care; and whenever a case proved fatal, the appearances on dissection are given with equal fidelity. Pathological opinions must of course partake of the nature of all speculative enquiries, and very different conclusions may be drawn by different individuals from the same morbid appearances; the Author therefore, having given the facts on which his own opinions are founded, leaves to others to draw from these facts their own pathological and practical deductions.

Military-Medical Reports,

&c. &c.

PART THE FIRST.

INTRODUCTION.

THE principles of medicine and the precepts of its professors, as they are taught in the several universities of Europe, are chiefly calculated for the countries and climates in which these institutions are founded; but the increasing population of civilized Europe, and the political obligations of its rulers, render it necessary that a portion of its overflowing population should emigrate to or occasionally visit other climates, by no means so favourable to European constitutions.

The countries to which the spirit of enterprize, the obligations of public service, or the desire of riches and distinction usually carry

the natives of Great Britian, are our East and West India possessions; and as among the natives of these countries the knowledge of the medical art, as well as of all the other arts and sciences, is but rude and very imperfect, the European physician, when he visits these climates, has to contend with diseases, of which even his theoretical knowledge must necessarily be imperfect. He must rely on his knowledge of the economy of the human body and of the diseases to which it is liable, and must endeavour to supply by observation his want of information on the different modifications of disease occasioned by climate, of which his academic preceptors, who had themselves never visited those climates, could necessarily have given but imperfect ideas.

From the view which we have here given of the East and West Indies, it will be easily seen that the practice of the medical profession is attended with much greater difficulty there than in Europe, and that a physician is obliged to be much more dependent on the resources of his own mind. There are few of the dogmas he had learned at the schools that are applicable to the climate in which he resides. He finds that diseases are frequent and various, and hurry on to a termination, too frequently fatal, with a rapidity that baffles calculation.

With a feeling of disappointment in the resources of science, he will often have occasion to witness his own unsuccessful exertions; and to observe a fatal termination take place in a period so short, and under circumstances so difficult to be explained, that he will find but an unsatisfactory explanation of his difficulties in endeavouring to reconcile the unfortunate result with the " ratio symptomatum morbi."

To lessen these difficulties, as much as circumstances will admit, it were desirable that every one of the medical profession, to whom necessity or choice, or the obligations of public service, had afforded an opportunity of witnessing the diseases of tropical climates, should make public the result of their own observations. But as we find men of the most exalted abilities and unquestionable veracity give such different views of the same diseases, the facts being necessarily the same, the difference must be occasioned by previous opinions or theories; it were therefore greatly to be wished, that in writing on the diseases of these climates, every individual would give, together with his own facts and observations, his own unprejudiced opinions, on every subject which admits of different views; and not shackle his judgment by the opinions of others, however much he might respect their authority.

A stock of facts, observations, and opinions, formed on such principles, would be the best guide to a physician who himself had no experience in the diseases of tropical climates. For whilst comparing the ideas of others on subjects which afterwards came under his own observation, he could appreciate the justness of each, and without blindly adhering to the opinions of any, might, by a comparative view of the whole, tempered by his own experience and judgment, arrive at something like a satisfactory conclusion, with respect to the extent of relief and assistance to be expected from medical science.

Of the difficulty of forming an unprejudiced opinion with respect to any particular plan of treatment, or of the operation of any particular medicines or remedies, every one must be conscious who himself has had any experience. When success for a time attends any new mode of practice, we imagine failures in similar cases could only have occurred from adopting a different mode of treatment; but from some peculiarities of constitution, or perhaps from causes not always explicable, we may afterwards have the mortification to find that our treatment, which we had hitherto found so successful, shall be attended with occasional failures; and perhaps in the end it will

not be found to merit more confidence than that which we before had abandoned.

As the results of disease are thus modified by a great variety of circumstances, such as habit, constitution, temperament, period at which the physician is first consulted, or in other words the stage of the disease at which the remedies are first applied; we must not hastily condemn any particular mode of practice because it should happen to be unsuccessful; nor repose with too much confidence on remedies because they may have happened in some cases to be useful; but by comparing practical facts and personal observation, with the known laws of the animal economy, we must endeavour to regulate our practice by principles of science.

OF THE

FEVER OF THE WEST INDIES,

COMMONLY CALLED

The Yellow Fever.

IN the long and melancholy catalogue of diseases, to which Europeans are liable in tropical climates, the Yellow Fever of the West Indies stands greatly pre-eminent. This disease has already been treated of by men of the first abilities in the profession, and their exertions have not been unsuccessful. Fever is still and ever will be attended with great mortality in the West Indies, because the causes which give rise to it, although they may be pointed out, cannot be removed; but it is certainly by far less fatal at present than formerly, which difference is occasioned by an improved mode of treating the disease, founded on more enlarged views of its nature and pathology, and introduced by scientific physicians.

As the author professes merely to give the result of his own observations, and the opinions which he has been led to adopt with respect to the diseases he purposes to treat of, he hopes that these eminent physicians will not accuse him of any want of respect for their opinions or abilities, should he omit to mention their names. The subject however of fever, not only of tropical climates but of fever generally, we conceive to have been so much elucidated by one eminent individual, and the practice at present adopted, not only in tropical climates, but also in every part of Great Britain and Ireland, and even taught in our universities, so much influenced by his opinions, that although we may not coincide in all his views on this subject, we could not think of entering on the consideration of fever, without mentioning his name and acknowledging his great merits. The individual we allude to is Dr. Jackson, inspector of military hospitals, and not long since chief of the medical department of the army of the West Indies; under whose auspices the author first commenced the investigation of these subjects. A physician whose extensive erudition and enlightened mind can only be equalled by his humanity and philanthropy; and whose deep and laborious researches into the causes and cure of

fever, as they were solely directed to the benefit of society, are fully rewarded by the beneficial results of a practice which he so long advocated; and which, notwithstanding the barriers of prejudice, is now generally taught and adopted.

The practice to which we allude, and of which we consider Dr. Jackson the principal author and most powerful advocate, is the free use of the lancet in the fever of tropical climates. To his persevering recommendation of this remedy, not only is owing the general adoption of it at present in the fever of the West Indies, but also the freedom with which it is used, in the typhus fever of Great Britain and Ireland. But a few years since the physicians of this country seldom had recourse to the lancet in fever. Shackled by system, and frightened by apprehensions of debility, they dreaded its use, and whenever they had recourse to it, it was always with doubt and uncertainty. The celebrated school of medicine of the university of Edinburgh, in which the principal physicians of Great Britain were educated, had, under the authority of Cullen's opinions, adopted principles inimical to blood-letting: and although the use of the lancet in fever was not absolutely interdicted from the professor's chair, it was

shackled with such cautious conditions, and its misapplication threatened with such fatal consequences, that when the physician, educated in this school, endeavoured to apply to practice the professor's ideas, he never could find a period of the disease at which he would think it prudent to make use of so doubtful a remedy. So that although not dogmatically prohibited by the schools, it was virtually condemned in the treatment of fever. But at present, even in the Royal Infirmary of Edinburgh, where the principles of the Cullenian doctrines might be supposed to be most firmly rooted, the enlightened physicians of that establishment prescribe blood-letting freely in fever.

When Dr. Jackson took charge of the medical department of the army of the West Indies in 1812, the practice generally adopted in fever was to saturate the system with mercury; and this plan of treatment was considered very successful. Another class of physicians, the followers of the Brunonian doctrines, undertook to cure the fever by endeavouring to remove the debility that attended it, by the aid of wine and other powerful stimulants. As might be expected, the latter plan of treatment was seldom successful, and it was only by considering the comparative success of both, that

the treatment by mercury acquired its celebrity. The mortality was frequently very great under the mercurial treatment, but as the treatment by stimulants was still more unfortunate, the advocates for the use of mercury daily increased. When a medicine or remedy has been found useful, and thereby attracts the attention of the practitioner, it too frequently happens that he ascribes to that exclusively, the beneficial results, which perhaps it had produced in common with other remedies. Such we conceive to have been the case with mercury in the yellow fever of the West Indies. As soon as attention was fixed on this medicine, the other means which had assisted it were altogether overlooked, and without taking the trouble to consider its mode of operation, the good effects which it produced were attributed to specific powers. The pathological views which Dr. Jackson entertained with respect to fever, founded on the morbid appearances on dissection of such as had fallen victims to it, induced him to recommend powerful depletion, of which system of treatment copious blood-letting was of course a principal part. He recommended the practice to the attention of the medical officers of the army, but wishing that it should be supported by its own merits only, it was a professional

and not an official recommendation. The great success which was afterwards found to attend this practice, notwithstanding the prejudices of some in favour of mercury, and of others in favour of stimulants, caused it to be pretty generally adopted; and Dr. Fergusson, who succeeded to Dr. Jackson as chief of the department, coinciding also in the same pathological views of fever, the practice became generally established. The comparative mortality in fever, in the West Indies, was never before so small as during the period that Dr. Jackson and Dr. Fergusson were heads of the department, from which we think it may fairly be inferred that the practice then followed was better than any that had been adopted at any former period.

PATHOLOGY OF WEST-INDIA FEVER.

We have said that the comparative mortality in this fever has decreased of late years, it is still however sufficiently great to afford but too many opportunities of ascertaining its ravages by dissection. We have had our-

selves but too many opportunities of examining the bodies of the victims of this disease: and as morbid appearances are palpable facts, on which all who see them must necessarily agree, so far as regards the physical changes produced in the body, however much they may differ in the conclusions they draw from them, we shall here mention the most important morbid appearances observable on dissection, in those who fall victims to West-India fever.

SURFACE OF THE BODY.

In some cases of this fever, the surface of the body and coats of the eye are tinged of an intensely deep yellow colour; whence the name "yellow fever" has been given to this disease. This yellowness of the skin, although highly characteristic of the worst forms of this fever, is not a constant nor even a very frequent occurrence. The skin is frequently pale, shrunk and constricted, the blood appearing to have totally forsaken the surface of the body.

DISSECTION OF THE HEAD.

On removing the calvarium, the surface of the dura mater dotted with bloody points,

evincing an increased vascularity of this membrane. The sinuses of the brain distended with dark venous blood. The whole mass of brain dark and heavy, conveying an idea of an engorgement of blood, unnaturally venous; such as may be observed in cases of asphyxia, and in other diseases where the lungs have but ill performed their functions, and the blood has not been sufficiently arterialized. Effusions of a serous fluid between the dura and pia mater, in the ventricles of the brain and base of the skull.

THORAX.

The lungs dark and heavy, and conveying an idea of solidity instead of their natural light and elastic appearance. Their substance engorged with blood. Adhesions frequently found, between the substance of the lungs and the inner surface of the parietes of the chest. Adhesions also between the heart and pericardium, formed by white and condensed layers of coagulated lymph. A considerable quantity of a green serous fluid effused into the cavity of the pericardium.

ABDOMEN.

Dark livid spots in the lining membrane of the stomach. The omentum and its appendages of a dark and dirty hue and appearance. The lining membrane of the intestines, and more particularly of the colon, dotted with dark livid spots. Even the small intestines, which in their natural state are nearly transparent, are generally found dark, heavy, and engorged with blood. The appearance of the liver various, but in general, where no organic disease had existed before death, it is found unusually dark, heavy, and solid. We have also frequently observed the liver of a deep yellow colour, and when cut into, presenting an appearance like a section of new cheese. Adhesions between the convex surface of the liver, and the parietes of the abdomen, by condensed layers of coagulated lymph. The spleen also assumes a variety of diseased appearances. The thin membrane which envelopes it is frequently found ruptured, and the substance of it crumbles between the fingers, appearing dark and dry, as if charred by the operation of an intense heat. In fact, the whole of the abdominal viscera and the great venous trunks in the abdomen, are

generally found gorged with dark coloured blood.

Let us now consider the above physical changes, or morbid appearances in the body, occasioned by this fever, and see how far they may assist us in directing the treatment of the disease. The principal circumstances to which we think attention should be directed, are the livid spots in the lining membrane of the stomach and intestines; the engorgement of blood in all the vital organs, and about the centre of the circulating system; effusions of coagulable lymph, producing adhesions between contiguous surfaces; and serous effusions into cavities, from the exhalent arterial terminations. That serous effusions, constituting dropsical collections, are the consequence of increased action of the vascular system, is now well ascertained, and dropsies are no longer held to depend on general debility, or what has been called a cachectic diathesis. Wherever serous effusions are found to have taken place, we may be certain that they had been preceded by inflammatory action, or at least by a morbidly increased action in the circulating system. Effusions of coagulable

lymph are among the most certain indications of inflammation: not even the presence of pus in any part can more certainly determine the previous existence of inflammatory action, than adhesions between contiguous surfaces, formed by condensed layers of coagulated lymph.

When we consider the above circumstances, we must certainly conclude that this fever is attended with an increased action of the circulating system, and a tendency to local inflammation; and we must at once reject the treatment founded on the Brunonian principles, which, contemplating the debility that attends this fever, as the object to which attention should be directed, attempts to cure the disease by tonic and stimulating remedies. There are few individuals in tropical climates, in whom some of the organs or viscera are not in a state of comparative debility, in consequence either of organic disease or of general diseases, affecting particular organs. When this is the case, the use of stimulants in the beginning of fever, must increase the danger of the disease, by endangering local inflammation. Organic debility is a necessary consequence of organic excitement, so that whatever organ or viscus has been more particularly accustomed to the excitement of strong and powerful stimulants,

will remain in a state of comparative debility, and whenever a general exciting cause is applied to the system, it will occasion a re-action in the vessels of such organ. The application of these pathological principles will explain most of the appearances on dissection, and many of the most important symptoms of the disease. The use of stimulating drinks and of stimulating diet, in both of which people freely indulge in tropical climates, causes an exhaustion of vitality in the vessels of the stomach, liver, and intestines; and whenever an attack of fever gives rise to a general excitement in the system, the re-action in these debilitated organs may occasion local inflammation. Such would appear to be the causes of the dark and livid spots which appear on dissection in the lining membrane of the stomach, and in many parts of the alimentary canal—of that incessant and distressing vomiting which generally attends this fever, and which, under the appellation of the "black vomit," is justly considered one of the most fatal symptoms of the disease. Such also are the causes of the serous effusions found in the different cavities, and also of the condensed layers of coagulated lymph, producing adhesions between contiguous surfaces.

We know that inflammation on the surface of the body, when it takes place in vessels that have been weakened by disease, or whose vitality has been comparatively exhausted by long continued excitement, is likely to assume a gangrenous termination. Wherever the circulation in vessels is very languid, whether that languor be occasioned by their distance from the heart, or by the exhaustion of their own powers, the effect will be the same, the action of inflammation excited in such vessels will endanger the destruction of their organization. Examples of this pathological fact are of daily occurrence,—whenever an individual has been weakened by disease, we find ulcers in such cases assuming a sloughy appearance. And phlegmonous tumours, succeeding to such diseases, seldom suppurate kindly, like healthy phlegmonous inflammation. Inflammation in the extremities, particularly of old persons, frequently terminates in mortification: the distance of the vessels of these parts, from the centre of the circulating system, concurring with that slowness of pulse which is a natural consequence of old age, to lower the principle of vitality. Thus the analogy of external inflammation, as well as the general pathological principles before mentioned, leads to

the conclusion, that the exhausted state of the vessels of the stomach, liver, and intestines, occasioned by the use of stimulating diet, predisposes them to inflammatory action, and endangers a gangrenous termination. Such appear to be the causes of the gangrenous spots which are found on the inner surface of the stomach and intestines; and of the great irritability of the stomach that attends this fever, and which is a necessary consequence of inflammation of that viscus. This affords the best explanation of that fatal symptom, the "black vomit," which certainly occurs most frequently in patients who have been accustomed to intemperate living, as in such the excitement of intemperance and dissipation occasions a greater exhaustion of the vessels of the stomach.

With respect to the "black vomit," as it is one of the most remarkable characteristics of this fever, we have paid to this symptom considerable attention; and although we believe that, in every instance in which it occurs, some portion of the lining membrane of the stomach will be found in a gangrenous state, we do not think that the matter ejected is exclusively or even principally a gangrenous or sphacelated slough. In consequence of the inability to retain any thing on the stomach

for some time previous to this fatal symptom, it has been imagined that the matter ejected could only proceed from the sphacelated coats of that organ. But if this matter be examined, it will be seen that it is not entirely a gangrenous slough, occasioned by the disorganization of the coats of the stomach; and if we consider the subject a little deeper, we will find another source from which it may have been supplied. This symptom occurs at a period of the disease, when the tone of the stomach is entirely lost, and the exhausted condition of the heart is such that it can scarcely communicate any motion to the circulating fluids. When a calm, as it were, has succeeded to the violence of febrile excitement, a sudden and unexpected gulp, of black and fœtid matter from the stomach, announces a fatal termination of the disease. The greater part of this black matter would appear to be bile in a state of incipient putrefaction, and is probably rejected in consequence of the loss of tone of the stomach, the intestines still retaining their irritability, and by their inverted action overcoming the feeble resistance of that organ.

We are aware that it is doubted by physicians of the greatest eminence of the present day, how far the term putrefaction can be applied

with propriety to any of the fluids of a living body; and we recollect with what caution Dr. Gregory of Edinburgh expresses himself, when treating of that form of fever which, according to former opinions, was considered a putrid or malignant disease, and in the language of Dr. Cullen was called "typhus gravior." From actual observation, however, we can affirm, that we have observed the last stages of the yellow fever of the West Indies attended with a stench almost as offensive as if actual putrefaction had taken place in the dead body; and this at a period of the disease when the unfortunate sufferer still retained the entire use of his intellectual faculties. Putrefaction of the circulating fluids appearing to lean to the exploded doctrine of the humoral pathology, is perhaps the cause why this explanation of the intolerable stench which sometimes attends the termination of fevers is so unwillingly admitted. We shall consider this symptom a little further. Of the vital principle we can form no very clear nor precise notion; we know it chiefly by its effects. We know that by means of it, the elementary principles of which the body consists are kept in union, and enabled to perform the actions and functions of the animal œconomy; and that when this principle has ceased or is dissi-

pated, the body is gradually resolved into these elementary principles by the exertion of other forces. This vital principle pervades every part of the body; we know however that it is liable to considerable irregularity in force and degree, from a great variety of causes. The application of stimulants for any length of time to the stomach, will considerably exhaust the vitality of its vessels. The long continued exertion of the eye, the hand, or of any other part of the body, will occasion an exhaustion of the powers of such part, and general exhaustion of the system will be occasioned by long continued exercise. In the same way the excitement of fever is followed by a general callapse or exhaustion of the system, during which the vitality of every part of the body is lowered in a degree proportioned to the previous excitement. As it thus appears that the vital principle is not a power which must either exist in full force, or cease to exist altogether, but on the contrary may be lowered and modified by so many causes, it is reasonable enough to conceive, that in the last stages of a fever that had been attended with great excitement of the system, the vital principle may be exhausted to such a degree, that the forces which afterwards occasion the total evolution of the elementary principles of the

body, may already have begun to effect their general decomposition.

The above we do not consider to be mere speculation, as it affords an explanation of some of the morbid appearances, on dissection, and of some of the symptoms of the disease which it is otherwise difficult to account for. The vitality of every part of the body depends on the state of the circulation in such part, and we know that in the last stages of the yellow fever the pulse is scarcely perceptible, and that long before the termination of the disease the action of the heart is so languid, that it cannot give to the blood the impetus necessary to propel it through the extent of the circulating system. The effect of this deficiency in the propelling power of the heart, will of course be first experienced in the remotest vessels, in consequence of which the extreme capillary vessels, or what have been called the "vasa vasorum," being deprived of the accustomed supply of blood, and in consequence of a portion of their vitality, will allow the transudation of the fluids they contain; and we know that the animal fluids, whenever they have exceeded or escaped from their natural channels, are subjected to the laws of inanimate matter.

Of the influence of the vital principle in preventing transudation, or rather of the facility with which transudation takes place when the vital principle has ceased, dissection affords striking examples. The gall bladder, if examined immediately after death, will exhibit no appearance of bile on its external surface; but in a very short time afterwards it will be found, that the intestines, or viscera in contact with it, will become deeply tinged with bile. During life, the vitality of the vessels in the coats of the gall bladder enables them to retain the bile within its cavity, but the moment that the influence of the vital principle has ceased, that fluid escapes by transudation.

In this way we would also explain that deep yellow tinge or suffusion which extends itself over the surface of the body, and has given to this disease the name "yellow fever." This symptom never occurs during the excitement that attends the first stages of fever: we have never found it present where the pulse was full and the heart capable of propelling the blood to the extent of the circulating system. When collapse has succeeded to the excitement of fever, and that deceitful calm which towards the end of the disease is frequently

mistaken for a sign of recovery, gives hopes to the patient and attendants, this suffusion takes place, and tinges the whole body of a deep yellow colour. This symptom is not so fatal as the "black vomit," and many recover after it has taken place; it may however be considered a sign of considerable danger, and it attends the worst forms of West-India fever.

That a diminution of the vital power is favourable to absorption, the operation of certain medicines affords us examples. The explanation is difficult, but the fact is certain, that an increased action of the circulating system occasions effusions into the cavities, that are bedewed by the arterial exhalents; or, in other words, that dropsy of these cavities is occasioned by causes that produce local or general excitement: while the remedies which have the greatest efficacy in removing these dropsical collections, are such as diminish the frequency of the pulse, weaken the propelling powers of the heart, disorder the general system, and exhaust all the powers of life. The action of digitalis affords a striking illustration: it diminishes the force of the heart, reduces the frequency of the pulse, occasions a relaxation of the solids, and a general exhaustion of the vital energies. During this

state of the system, and when the principle of vitality would appear to be nearly extinct, the absorbents become particularly active, and frequently effect the removal of extensive dropsical collections. In a somewhat similar state of exhaustion of the system—when the action of the heart is languid and feeble, and is scarcely sufficient to carry on the circulation, the absorption of bile from the relaxed and debilitated vessels of the liver, tinges the surface of the body of a saffron hue.

One only of the morbid appearances on dissection remains now to be considered; that is, the engorgement of blood in all the vital organs, in the viscera of the abdomen, and the great venous trunks about the epigastric centre. All these parts are stuffed with blood, and when the abdomen is laid open, the omentum covering the intestines appears dark and dirty, and consisting altogether of a congeries of vessels, stuffed with dark-coloured blood. From this morbid appearance, very different conclusions may be drawn, and widely different principles of treatment are likely to be suggested to the minds of practitioners, according to the different views which they take of this symptom. This engorgement of blood is considered by many eminent physicians, the strongest pathological argument

in favour of copious blood-letting; and whenever, on examination after death, this morbid appearance has been observed, they regretted that blood-letting had not been carried to a greater extent. In fact, having detected this engorgement of blood, it was seldom thought necessary to look further for the cause of death, as they supposed that it afforded a sufficient explanation of the fatal termination of the disease. Although we know by experience the utility of blood-letting in this fever, we are of opinion that no solid argument in favour of it can be drawn from this engorgement of blood; and as we think that blood-letting has in some instances been carried to an injurious extent, in consequence of this morbid appearance, we shall endeavour to explain our reasons for that opinion. We mentioned before, at considerable length, that a collapse of the system succeeds to the excitement of fever, and that the debility, or exhaustion, experienced in every organ or viscus, will be in proportion to the excitement to which it had been accustomed. In addition to the excitement occasioned by climate, the use of stimulating drinks and of stimulating diet, in both of which people generally indulge in tropical climates, by continually keeping up a degree of local stimulation in the liver, stomach,

and intestines, renders the vessels of these parts comparatively weaker, and when the excitement of fever has subsided and occasioned a general exhaustion of the system, the greater debility of the vessels of these organs will occasion local and organic congestions. In addition to this, as the heart gradually loses its propelling powers towards the termination of the disease, the vessels which are most remote from this circulating centre will be the first in which the circulation will entirely cease; and consequently the veins of the chylopoietic viscera, in which the circulation even in health is naturally slow, must, from this cause, at the period of death be distended with blood, as they must long since have lost the power of transmitting that fluid. The application of the same principles will serve to explain the congestions of blood in the brain, lungs, &c. Whatever increases the momentum of blood through the lungs, increases the frequency of respiration, and through the brain, the activity of the cerebral functions; and when the excitement of fever has ceased, the general collapse of the system will be attended with engorgements of blood in these organs.

If this explanation of the congestions of blood found on dissection be correct, it will

be easily seen that blood-letting could not have prevented them, to whatever extent it might have been carried. Blood-letting can only be useful during the period of excitement, but, according to the above explanation, these congestions do not take place during the stage of excitement, but are a consequence of the exhaustion of vitality in the vessels of these several viscera and organs. From this view of the subject it will be seen that, instead of blood-letting, stimulants would appear to be the appropriate remedies, to prevent these morbid congestions; and when given at the period of collapse succeeding to the excitement of fever, by increasing the propelling power of the heart, and communicating to the system an artificial and temporary vigour, they will powerfully promote the venous circulation. Local as well as general stimulants should be used during the stage of exhaustion and collapse. The occasional exhibition of drastic purgatives during the course of the disease, by stimulating the intestinal canal, has also a powerful effect in promoting the circulation of blood in the great abdominal veins, and the vessels of the chylopoietic viscera.

If these views be correct, we must see the danger of considering these congestions of blood as a criterion of the necessity of further

blood-letting. If, on examination of a body after death, a physician were to observe these congestions of blood, and to conclude from thence that blood-letting had not been carried to the necessary extent, whenever a similar case of disease presents itself to him afterwards, he feels justified in carrying this remedy further; and should he even then be unsuccessful, and the same engorgements of blood be found on dissection, he feels inclined even to carry it to a greater extent. What we mention is not mere speculation, we have seen it occur, and acted on, and as we thought with injurious effect. Blood-letting, at the commencement of the disease, if carried to a certain extent, will lessen the degree of excitement, and consequently lessen the degree of exhaustion, which is always in proportion to the previous excitement; but if blood-letting be carried too far, or repeated after the stage of excitement has passed, it will increase the exhaustion of vitality, and accelerate the fatal termination of the disease.

OF THE CAUSES OF WEST-INDIA FEVER.

Such a variety of circumstances conduce to the production of this fever, that it is difficult to determine where we should begin in the enumeration of causes; or to which of them to assign the priority or precedence in the great chain of causation. Heat, agitation, anxiety, intemperance, sudden transitions of temperature, with an atmosphere occasionally loaded with noxious exhalations, produce nervous irritation, restlessness, lassitude, determinations of blood from the surface to the internal and vital organs, re-action in these organs, and ultimately general excitement. Such appears to us to be an abstract of the moral and physical causes of the fever of the West Indies; but in order to develop them more fully, we shall here insert copies of some official military reports, on the subject of West-India diseases, which were transmitted by the author at different periods to the director-general of the army medical department; and some of which have been already published in different numbers of the Edinburgh Medical Journal. As these reports were written during

the ravages of this fever, and when the causes and consequences of the disease strongly engaged the attention of the author, he thinks that they will produce a greater impression than a more elaborate account written at a subsequent period. Although these reports were principally written in the island of Trinidad, the observations contained in them were the result of about five years' experience within the tropics: during which time the author had an opportunity of witnessing the progress of fever in most of the West-India islands: and as the general characters of countries lying within the tropics are pretty nearly the same, the topographical and meteorological observations, contained in the following reports, may, with perhaps some slight modifications, as to degree or intensity of cause, be applied not only to the other West-India islands, but also be extended to all tropical climates.

The report, of which the following is a copy, was transmitted from the Island of Trinidad in the beginning of 1816.

"The barracks occupied by the Royal York Rangers, in Trinidad, are situate in the interior of the island, at a small village called St.

Joseph's, about eight miles east of Port of Spain, which is the nearest coast. A ridge of mountains, extending nearly due east and west, passes the situation of the barracks on the north side at about the distance of a mile; this chain of mountains, where it passes the barracks to the northward, is interrupted by a long and winding valley, through which a number of rivers from the north side of the island flow at the bottom of deep ravines, overhung with trees and brushwood. The largest of these ravines, winding from north to south, bounds the situation of the barracks on the east side. Over this ravine, and to the eastward of the barracks, the highest mountain in this part of the island rises to an elevation of about 2000 feet, and by breaking the course of the east wind, diverts its current into the valley and ravine, and gives it a northerly direction.

"To the southward of the situation a valley extends for several leagues to the south coast of the island, where it is terminated by a ridge of mountains, which run east and west along that coast, and are nearly parallel with the others which pass to the northward. Through the centre of this spacious valley flows from east to west, with an almost imperceptible

motion, the principal river in the island, called the Caroné. This river, having received, as it passes through the valley, the smaller rivers which flow from the mountains on the northward, empties itself into the sea on the west coast, to the southward of Port of Spain.

"The valley through which the Caroné has its course, is nearly level throughout its whole extent, and scarcely higher than the level of the sea, consequently the motion of its water is very slow. Unless when occasionally swelled by great falls of rain, it presents more the appearance of a stagnant lake, than of a river receiving so many rivulets.

"The cultivated parts of the valley are covered with groves of cocoa trees, and of a particular and beautiful species of tree called by the inhabitants the "bois immortel," which is cultivated with the cocoa for the purpose of shading it from the intense heat of the sun; and by its towering height and shady branches, it effectually answers the object of its cultivation. The uncultivated parts are very extensive, and are covered with every description of brushwood.

"The road, from Port of Spain to Saint Joseph's, is crossed in several places by the rivers from the mountains, going to empty themselves into the Caroné, and when these

rivers are swelled by heavy falls of rain, the road is altogether impassable.

"From this general view of the country in the vicinity of the barracks, it will be seen, that it abounds with mountains, vallies, rivers, and ravines; the whole overhung with trees and brushwood. The intense heat of the sun, during the day, by rarefying the air, occasions an evaporation from the surface of such a country. During the night, the earth being cooled, a denser air rushes in from the surrounding hills, and restores the equilibrium of the atmosphere. The air, before rarefied and saturated with evaporation, is compressed, and forced to part with its aqueous exhalations, which descend towards the morning in thick fogs and vapour into the valley and situation of the barracks. The valley, if viewed at a distance at this hour, presents the appearance of a large and unequal lake. During the descent and condensation of these vapours, an intense degree of cold is produced, and is only removed by the great heat of the sun, which, by rarefying the air, expels these fogs and vapours.

"From this account of the country it will be easily seen, that a great quantity of rain must necessarily fall there; and such is actually the case. The inhabitants divide the year

into two seasons, the wet and dry; but since the arrival of our regiment, (about six months) it has been almost continually wet.

"From the great extent of country which is uncultivated and covered with brushwood, from the leaves continually dropping among weeds and rubbish, combined with the great humidity of the atmosphere, and the action of the sun's heat on all these bodies, a putrefaction of vegetable matter must take place to a great extent, with the production, and evolution, of noxious exhalations; the air is of course impregnated with these effluvia.

"The men's barracks are objectionable on account of their situation, their plan, and their state of repair. They are situate on the brink of the ravine, which I before described as bounding the barracks on the east. The north-wind comes through this ravine as through a funnel from the valley and mountains, loaded with vapours and exhalations, and impregnated with the effluvia arising from the putrefaction of vegetable matter, which necessarily takes place at the bottom of these deep ravines. There are no galleries to the barracks to break the current of this wind, and the floor is in contact with the earth, and only admits beneath it a deposition of stagnant water, and every other filth, which a concourse of persons

necessarily occasions. The boards of the floor have rotted in several parts, and give free admission into the barracks of the effluvia arising from the stagnation beneath it. The roof is in about the same state of repair. Thus the north wind enters the windows of the barracks in the rear, not only impregnated from its course along the ravine, but fully saturated with worse effluvia arising from underneath the barracks, and which no attention to cleanliness on the part of the regiment is sufficient to obviate.

"The officer's barracks are less objectionable, they have a southern aspect, with a gallery in front, and being farther removed from the ravine, are less under the influence of the vapours arising from it. But they require a gallery in the rear, the want of which renders it necessary, whenever it rains, to shut up the rooms on the windward side; and as it rains here very frequently, this circumstance is attended with considerable inconvenience; added to this, an interval is left between the wall and roof in front of the barracks, and the rooms communicate with each other at the top, the partitions not extending to the roof of the building. I suppose that this plan had been adopted for the purpose of allowing a free circulation of air, and rendering the rooms

cooler, but these advantages appear to be more than counterbalanced by the admission of the damp night air.

"The hospital is a fine, large and airy building, and the different offices judiciously planned; but it affords accommodation for no more than about seventy patients without being crowded, and consequently is much too small for a regiment. It is much to be regretted that there are no galleries to this hospital; if it were surrounded with a gallery, it would prevent the frequent necessity of shutting up the windows on the north front whenever it rains, and those on the south when the sun beats in that direction. This necessity of frequently closing the windows of the building, occasions a great inequality of temperature, that is highly injurious to the sick. The range of a gallery would also greatly assist the convalescence of patients recovering from acute diseases. It would be better if, instead of one large building, two wards had been made, as it would allow serious cases of disease to be separated from surgical cases and convalescents. A dead house is also much wanted, and the whole would require to be enclosed.

"From the above general description of the country in the neighbourhood of the barracks, and more particular account of their situation,

&c. it will be seen that the barracks occupied by the soldiers are cold and damp, and that the air they respire is rendered impure from the causes already mentioned; that a great change of temperature takes place here at different periods of the day; that the heat is excessive when the sun is vertical, and the cold intense at night and in the mornings. The operation of all these causes on men habitually intemperate, necessarily produces a great deal of disease; accordingly, fevers, remittent and intermittent; fluxes, coughs, and other pneumonic affections, are very frequent among the men, but fluxes or dysenteries are by far the most prevailing diseases.

" With respect to the inhabitants, I have made every enquiry of the medical practitioners residing here, but as there are no records kept, there are no data to calculate the ratio of sickness or mortality. The diseases among the whites appear to be the same as among the troops, the people of colour are subject to the same diseases. The fevers among the latter are seldom of the remittent kind, but they are very subject to intermittents. The negroes are seldom affected with fevers—the remittent is scarcely known among them. Their general diseases are, " mal d'estomac," pneumonia, phthisis, pulmonalis, acute

and chronic dysenteries; and often, before they prove fatal, attended with general dropsy."

The following is an extract from a more general report respecting Trinidad, transmitted at a period subsequent to the above.

"This island, so beautiful in its exterior, and so luxuriant in the production of every thing besides, in the animal and vegetable kingdoms, is unfriendly to the constitution of man. The whole face of the country is covered with trees and brushwood, and it abounds with rivers and rivulets, and the greater part of its extent is a continued marsh or swamp. The action of the sun's heat, on such a soil, occasions a continual evaporation from the surface of the earth. This evaporation becoming combined with marsh miasmata, and the effluvia arising from the putrefaction of animal and vegetable matter, the atmosphere is generally loaded with the seeds of disease. The evaporation occasioned during the day by the intense heat of the sun's rays, becomes condensed on the higher grounds and hills during the night, and occasions a great degree of cold, and a greater disproportion between the temperature of the day and the night, than is ever experienced in any of the other islands.

The thermometer in the shade at noon stands generally at about eighty-three, at the military post of Saint Joseph's, about seven miles east of Port of Spain, in the interior of the island; and at the same place, at five o'clock in the morning, it frequently ranges as low as sixty. At this hour in the morning, which I believe is the time that the greatest degree of cold is produced, if a view of the island be taken from an eminence, the condensed and floating vapours appear like a continued sheet of water losing itself gradually in the surrounding sea, the surface appearing as if undulated by a gentle breeze; or, perhaps, rather presenting an appearance like the heaving of the ocean, after the greater agitation of a storm has subsided.

"The human body, subjected during the day to an atmosphere sultry and impregnated with unhealthy effluvia, and this too frequently while under the influence of excesses and intemperance, is chilled by the difference of temperature above alluded to. The blood is driven from the surface, and leaves the skin and extreme vessels pale and flaccid, while the force of it is directed to the internal and vital organs, occasioning all the consequences of diseased action in these parts. The increased action of the lungs frequently occasions pneu-

monic inflammation, sometimes terminating in an effusion of lymph, into the air cells, and occasioning suffocation, but more generally producing dropsy of the chest. The liver becomes solid and tuberculated, the biliary ducts thickened and obstructed, the contents of the gall bladder become extravasated, and give to a section of the liver the colour and consistence of new cheese. In a word, the action of all the internal organs is increased, and occasions a serous effusion into all the cavities that are bedewed by the arterial exhalents.

" As might be expected from the surface of the country, a great quantity of rain falls in this island. These copious falls of rain occasion that luxuriance of growth in all kinds of vegetable matter which has been already noticed, and affords an inexhaustible source for vegetable putrefaction. It has been remarked by the inhabitants of this colony, that a dry season is more unhealthy than a wet one; and from having observed and attended to the effects of both kinds of weather on the troops, I have no hesitation in coinciding in that opinion, so far as regards remittent fevers, which are certainly more concentrated and more dangerous during a hot and dry season than they are during a wet one. I believe

that this is caused by the rain preventing the sun from acting on the marshes, and evolving their pernicious effluvia. Hot weather, immediately succeeding to rain, is the most unhealthy, as the sun then acts with double effect on the accumulated sources of effluvia collected during the rain. I have no doubt however but that dry weather, should it continue sufficiently long to dry the earth and purify the atmosphere, would render this island more healthy; such a change of climate can only be produced by human industry, by clearing the country and draining the marshes, but from the disproportion of the number of the inhabitants to the extent of the island, this desirable object is never likely to be accomplished, and consequently it will continue a source of disease to every European whom duty or choice or imperious necessity obliges to become an inhabitant of its luxuriant soil."

The report, of which the following is a copy, was transmitted in 1816, at a time when the whole of the West-India islands were more unhealthy than they had been for several years before. The fever raged with unprecedented fury throughout the whole of the islands, and

at Barbadoes alone, which was head-quarters of the army, twenty-five officers, including Sir James Leith, commander of the forces, fell victims to it in the space of about three months. The Second or Queen's Own, which had arrived in Barbadoes from England about four months before, had at this time lost very nearly half its numbers, both of officers and men. The agitation occasioned by this unprecedented mortality gave rise to a variety of opinions respecting its causes, and a great deal of discussion respecting the contagious or non-contagious nature of the fever. In the following report will be seen the view which the author took of the causes of this great mortality; and also the method of treatment which was resorted to.

"The Royal York Rangers, at this station, having, during the months of August and September, been more than usually unhealthy, and a report at the same time prevailing that a fever, apparently contagious, had made its appearance in several of the West-India islands, the greatest attention was paid to the state of disease in this regiment, in order to ascertain, if possible, whether there was any thing contagious in its character.

"The weather during this period was, as is usual at this station, almost continually wet, but the intervals of showers were marked by a more intense degree of heat than at any former period since the regiment had arrived in the island. The thermometer in the shade, at noon, was seldom lower than eighty-five, averaging three or four degrees higher than the usual temperature of the place. The continual rains had prevented the brushwood which surrounds the barracks and hospital from having been cleared away, the intense heat of the sun during the intervals of showers occasioned an increased degree of exhalation, from these sources of effluvia, and from the swamps and marshes which are contiguous to this post, and rendered the atmosphere more than usually impure, while scarcely a breath of air relieved the oppression occasioned by the sun's heat, or assisted to cool the sultry atmosphere.

"About one hundred patients (being about one-fifth of the whole regiment present in this island) was, during this period, the average number on the list of sick. The remittent fevers were in general less inflammatory than those which had usually occurred in this regiment. They were in general characterized by great debility, by a paleness of the face, a

shrunk and dejected countenance, a feeble and unequal pulse, a general excitement and great irritability of the nervous system, a coldness of the skin, while the heat and blood appeared to retire to the internal and vital organs. A low delirium or stupor appeared early, and attended throughout the progress of the disease. Such as put on these appearances were the most dangerous. Some were attended with greater action of the sanguiferous system, and determination to the head, with violent delirium. Such as assumed this form, in general terminated favourably.

"The absence of inflammatory symptoms, in most of the cases of fever, appears to be in a great degree occasioned by a change which has taken place in the constitutions of many of the men since they came to this island—many who were then of plethoric habits and of robust constitutions, are now of a pallid sickly hue and dropsical diathesis. This change of habit and constitution has, I understand, invariably taken place in every white corps that has hitherto occupied this post for any considerable length of time.

"The unfavourable state of the weather and atmosphere, during the months of August and September, not only occasioned an aggravation in the character of the fevers, but also

produced an unfavourable effect on all the diseases in the hospital. The chronic cases of disease, such as chronic flux or dysentery, phthisis, anasarca, &c. which, although there could be no hopes of curing, might in a more healthy season linger out some time longer, owing to the above causes, dropt off in a more than usual proportion. The ulcers became foul and sloughing, and they and the cases of fever appearing mutually to affect each other, it was found necessary to occupy a part of the barracks for the accommodation of surgical cases.

"From all these considerations, I am inclined to conclude, that whatever increase of sickness or even of mortality has occurred at this station within the last two months, it may be accounted for by the unfavourable state of the weather and atmosphere, occasioning aggravated forms of disease in constitutions which have been injured by local peculiarities, and which are always under the influence of irregularities and intemperance; and consequently that the fever which appeared at this station, is but an aggravated form of the endemic fever of the country, and occasioned by the causes already mentioned, but having nothing contagious in its character."

The practice which was adopted in the treatment of this fever is explained in the following cases; which were also transmitted with the original report.

"John Humphreys, of the Royal York Rangers, thirty-two years of age, of a robust constitution and plethoric habit, was admitted to hospital at Saint Joseph's on the 17th of August, 1816. He complained of pains in his back and extremities—pulse 120, full and strong—heat 99—skin dry—face flushed—eyes inflamed—great throbbing of the temporal arteries and determination to the head—tongue foul—bowels costive—great excitement and irritability of the system. Three pounds of blood was taken from the temporal artery. The bowels opened with a scruple of calomel and an ounce and a half of salts. A warm bath, and ten grains of calomel and six of James's powder at bed time. On the 18th, or second day of the disease, the symptoms were somewhat moderated—skin still hot and dry—head-ache still severe. Five grains of calomel and three of James's powder, and one ounce aquæ acetatis ammoniæ, four times a day—warm bath repeated. On the third day of the disease, delirious—great irritability of the nervous system—pulse 110—heat 96—

tongue parched—eyes sunk—countenance expressive of great anxiety—stomach sick.

℞ Camphoræ,
Hydrarg. Submuriatis āā. gr. iv.
Opii gr. ss. M. fiat bolus quater in dies capiendus;
Haustus effervescens post singulos bolus capiendus.

Blisters were now applied to the head and stomach, and the bowels kept open by frequent enemas. Plenty of diluents, such as toast water, rice water, &c. was given him, varied to his taste. On the fourth day of the disease, his bowels not being sufficiently free, ℥i. olei ricini was given, which remained on the stomach, and produced the desired effect—the boluses were continued. The great excitement of the system became gradually less—the intellects became clearer—the pulse soft and regular, with a gentle moisture on the skin. And on the 22d of the month, or sixth day of the disease, he was free from fever. His progress to convalescence was regular, and on the 11th of September he was discharged from hospital. This case of fever was attended with more inflammatory action than any other which occurred during the period."

"Sergeant Haigh, of the Royal York Rangers, thirty-four years of age, of a spare habit and weakly constitution, was admitted into hospital at St. Joseph's, on the 26th of August, 1816. He had been exposed to a great deal of fatigue on the day before, during very bad weather, and had remained in wet clothes the greater part of the day. When admitted to hospital, he complained of head-ache—pains in his back and loins—pulse frequent and feeble—skin hot and dry—countenance anxious and dejected—tongue parched—stomach sick. Blood was taken from the arm, but syncope occurring, only twenty ounces could be taken away. He had a scruple of calomel, and afterwards salts, which operated freely. On the 27th, or second day of the disease, pulse frequent and small—skin cool—eyes languid—countenance pale and anxious—stomach sick, and rejects even arrow-root and tea—thinks himself better—bowels open—tongue parched—

℞ Hydrarg. Subm. gr. iv. Opii gr. ss. fiat pilula, 3tiis horis capienda: Haustus effervescens post singulas pilulas.

Applicetur Emplastrum Cantharidis scrobiculo cordis.

Enema Opiatum.

These remedies were continued during the day, but the irritability of the stomach continuing and increasing, he could neither retain the medicines nor nourishment. The vomiting continued incessant, notwithstanding the use of effervescing draughts, opiates, enemas, fomentations, &c. He became gradually exhausted, and died about three o'clock in the afternoon of the 28th, about forty-eight hours after he had been received into hospital."

The following were the appearances on dissection.

" Adhesions of the lungs to the pleura; the liver covered externally with a white and firm membrane of coagulable lymph, forming a firm bond of connexion between itself and the abdominal parietes; the lining membrane of the stomach bedewed with an exudation of a whitish coloured fluid, probably coagulable lymph effused from the inflamed vessels; livid spots in several parts of the stomach and colon; the great arch of the colon was a gangrenous mass."

The ratio symptomatum in the above case is difficult. The appearances, on dissection,

would lead to a wish that blood-letting had been carried further. It is difficult however to conceive that such ravages could have taken place within the short space of forty-eight hours, which was the whole length of time that he had been in the hospital. The effect which the bleeding produced prevented it from being carried to any great extent, or afterwards repeated. The subject of it had been a long time in the West Indies, and had been accustomed to drink a great deal of rum. It is probable that the stomach and intestines, from the continual use of stimulants, were at the time of this attack in such a state of debility and exhaustion, that the excitement of fever and inflammation almost immediately destroyed the remaining vitality of their vessels; so that bleeding, to whatever extent it might have been carried, would probably have been attended with no advantage.

The following case, which occurred at the same time, and was transmitted with the same report, was also extremely interesting.

"Lieut. ———, of the Royal York Rangers, about twenty-five years of age, of a spare habit and delicate constitution, found himself unwell

on the 4th of September, 1816. He complained of head-ache—pains in the back and loins—great prostration of strength—pain in the chest, attended with cough and difficult respiration—pulse accelerated—nausea, and thirst. He had been shooting in the woods on the day before this attack, and had been exposed to torrents of rain. He was bled to the extent of thirty-two ounces, a blister applied to the breast, and a scruple of calomel and ℥iss. salts given him. On the second day, pulse 100, and feeble—heat 90—tongue foul—bowels open—head-ache something better.

℞ Submuriatis Hyd. gr. v. pulv. Jacobi gr. iij. M.
capiat 4ter in dies.
Balneum Tepidum.

These medicines were continued during this day; and on the third of the disease, he was free from fever. He continued free from fever during the day, but in the evening he imprudently drank some porter, and went to a gentleman's house in the village of St. Joseph's, where he was again taken ill, and was brought to his quarters in a state of delirium—pulse feeble, frequent and irregular—face pale—countenance anxious—great excitement and irritability of the system.

℞ Submuriatis Hyd.
Extract. Colocynth. comp. āā ℈i. M. fiant pilulæ statim sumendæ.
Capiti raso et cum aceto lavato, applicetur Emplastrum Lyttæ.
Enema purgans cum Ol. Ric. ℥ij.

He continued delirious during the night, and was kept in bed only by force. On the fourth day of the disease, still delirious—restless—picking at the bed clothes—bowels open—pulse about 100—heat 86—eyes sunk—countenance anxious—pulse tremulous and irregular.

℞ Camphoræ,
Submuriat. Hyd. āā gr. iv.
Opii gr. iss.
Confect. aromat. q. s. M. fiat bolus. 4ter in die capiendus. Haustus effervescens post singulos bolos. Enema ex amylo cum Tincturæ Opii guttis xxxx. ter in die.

He remained delirious during the day, without any amendment. The only favourable symptom was, that the stomach retained the medicines, and some tea and sago. He continued low and delirious, or rather comatose, during the two following days. On the fifth, wine was given him, and cataplasms of red peppers pounded with flour were applied to his feet: the boluses were continued. The delirium abated on the evening of the fifth; his intellects

became clearer—pulse regular—skin moderately warm and moist—he slept several hours during the night, and on the morning of the sixth day of the disease, or fourth from the second attack, he was free from fever. Although extremely exhausted and debilitated, he continued to improve, and is now (20th September) in a state of convalescence.

"From the 1st of August to the 20th of September, forty-five cases of remittent fever were admitted to hospital, and the case of the officer above detailed makes forty-six within this period. Of this number, five died, the others are convalescent or under treatment, and likely to do well. Those who died were men who had suffered from former diseases, and whose viscera were much diseased. All the other cases were similar to those that have been detailed, and the mode of treatment the same, allowing some variation for variety or peculiarity of symptoms. The James's powder, when used, was sometimes observed to increase the general sickness and uneasiness, and to occasion sickness of the stomach. Camphor, calomel, and opium, with effervescing draughts, were the remedies that appeared to be attended with the greatest benefit; and seemed to remove, better than any other medicine, the general restlessness and excitement of the

system, which, whether a cause or consequence of the disease, always attended it. It was observed, that the action of mercury on the system did not supersede the action of fever, as some of those who died were under the influence of that medicine."

In three months from the date of the above report, another was transmitted, explaining the state of the regiment during the intermediate period. The following is a copy.

"Since the last report, the weather has been more favourable in this island than it had been since the arrival of the regiment; the consequence was, that there was less acute disease, but the number of men labouring under chronic affections sufficiently swelled the list of sick, and kept it up to a melancholy extent.

"Since the beginning of December the rainy weather has again commenced, attended as usual with a chilling unhealthy atmosphere; it has occasioned an increase of acute disease, and the old worn-out cases also drop off in a greater proportion than during the two preceding months.

"A case of fever now in hospital, and I believe likely to do well, has been very in-

teresting on account of an uncommon symptom that attended it. In the course of the disease a considerable degree of inflammation was observed in the nose, a solution of acetate of lead was applied to it, but in the course of a few days it was found that the spongy bones of the nose were destroyed, and the cavity filled up with maggots of the common size, and such as are usually generated in putrefied animal matter. Hundreds of these maggots were taken away, but their places were again supplied with a succession of others: their source seemed to be inexhaustible. They appeared to be supplied from the antrum and other cavities of the face. It was apprehended that a caries of the whole of the bones of the face would take place, as a considerable degree of fœtor attended it, and in the course of the disease became almost intolerable. Charcoal and camphorated spirits were applied to remove the fœtor; and spirits of turpentine, snuff, and the powder of a vegetable which grows in the island, and is called by the natives "capuchin powder," were successively tried to destroy the maggots. Camphor, opium, porter, &c. were given internally. The progress of the caries stopped with the destruction of the palate bones and spongy bones of the nose, and the maggots have now ceased to be generated, at

least to be discharged. The inflammation of the surrounding parts is removed, and although there are several holes in the upper part of the nose, occasioned by the destruction of the bones and soft parts, the patient is likely to recover.

I am at a loss to know whether the maggots in this case might have been generated by insects finding their way into the cavities of the face, and there depositing their ova, and that the caries of the bones was a consequence of the irritation occasioned by these insects; or whether the impure air of a crowded hospital, rendered still more impure by the miasmata arising from a swamp in its immediate vicinity, might have, by its effect on a diseased constitution, occasioned the caries, and that these insects were generated by the progress of disease among the bones.

"In the treatment of fever, the same practice was followed which has been mentioned in a former report, and attended with considerable success. The lancet was used whenever the disease was attended with any great degree of increased arterial action, and particularly when attended with pneumonic inflammation, which has been the case with many. The low fevers were treated with calomel purgatives, calomel, camphor, James's powder, opium, &c. as prevailing symptoms appeared

to require. The acute dysenteries with bleeding, neutral salts, Dover's powder, and in the more aggravated cases the system brought under the influence of mercury. In the cachectic and chronic cases of disease, calomel combined with opium, alternated with such remedies as were likely to relieve the most urgent symptoms, digitalis tinct. muriat. ferri, colombo, extract of bark, &c. according to circumstances and prevailing symptoms.

"That disease which has been so frequently spoken of as being peculiar to this island, and from which the West India Rangers suffered so much at this post, is now well marked in many of our men. Their countenances bloated, cadaverous and dejected—legs and feet œdemateus—respiration hurried and difficult—they become exhausted by the least fatigue—some of them are observed, during the gentle exertion of walking, to stop suddenly, and laying their hands on their knees endeavour by bending their body to assist their laborious breathing. This disease has, I understand, been considered a disease of the stomach, and called, "mal d'estomac." In its form among our men, although it is always attended with sickness and nausea, the affection of the stomach appears to be merely a consequence of a generally diseased state of the system.

When the symptoms I have mentioned have been present for some time, the unfortunate sufferer either becomes anasarcous, or a wasting diarrhœa attacks him; or perhaps when received into hospital he only complains of difficulty of breathing, which in these cases is occasioned by water in the chest; or perhaps a complication of all these symptoms will be present in the same individual. If relief is afforded him, and he is discharged from hospital, it is only a temporary respite; he is again admitted with more aggravated symptoms, and his constitution at length sinks under this complication of diseases.

"To trace a European soldier from the time he arrives in Trinidad in perfect health, till his constitution is exhausted by a succession of diseases, is melancholy but interesting. A post like St. Joseph's, in the middle of a country, and without any barrier or boundary to restrain the excursions of the soldier, or to prevent the introduction of rum, affords every facility of indulging in this destructive liquor; especially where the barracks are surrounded with sugar plantations, where new rum can be got for a mere trifle. The new soldier or recruit greedily indulges in this, and is frequently while under the influence of excesses exposed to the chills and damps of the post; after

each monthly payment, he goes into hospital with a bowel complaint, or perhaps an attack of fever. A succession of these scenes recur with the monthly periods of payment; at length, the habit, which was robust and plethoric on his first arrival, becomes cachectic and œdemateus; water is now contained in the chest and perhaps in the abdomen, the lungs frequently diseased, the stomach rejects food, and the whole constitution has now suffered that change which characterizes the disease of the island.

"In producing this change in the constitutions of the men, there are many other causes that might be mentioned. The bad state of the barracks and the marshy nature of the country, have been represented in a former report. A great cause, among soldiers of a certain description, is the insuperable barrier which they know is opposed to their return to their own country. Where hope is cut off, desperation succeeds to it, and viewing their situation through the gloomy medium of despair, they become careless of existence, and consequently indulge in any excesses that produce a momentary gratification."

In March, 1817, another report was transmitted, in which the effect of an unusually dry

season on the health of the troops is mentioned, and renders it on that account interesting. The following is a copy.

"During the quarter ending the 24th of March, the weather in this island has been a perfect contrast to that which was experienced in the same season last year. There were then continual rains—there has been during the above period a continual drought. The effect of long continued heat on the marshy soil of this island appears to be injurious to the human constitution, as the most severe cases of remittent fever which occurred in the regiment since its arrival have been experienced in the last quarter, and the most dangerous and fatal of these cases have occurred when the heat was particularly oppressive, and when the atmosphere, loaded with noxious exhalations, was hot and oppressive to the sensation, and even in the shade occasioned a difficulty of respiration. The heat and dryness of the atmosphere seemed to communicate their characters to the fevers; although not accompanied with any great degree of external heat, or any inflammatory action, but on the contrary with a coldness of the surface, and a diminished action of the sanguiferous system, the patients invariably complained of an in-

ternal burning sensation; and in those in whom it proved fatal, about the fourth day of the disease, the features became shrunk and withered, and the tongue and teeth exhibited the appearance of having been charred by the operation of internal heat.

"During the wet season, intermittent fevers, bowel complaints and pneumonic affections, are more prevalent in this island than during a dry season. But long continued heat, exerting its influence on its swamps and marshes, appears capable of occasioning remittents of great malignancy and danger. The swamps and marshes, while covered with water, appear to emit less concentrated miasmata—such perhaps as under certain circumstances are capable of producing intermittent fevers—while the chills and changes of temperature, which attend wet weather, may give rise to the inflammatory diseases before mentioned. A continuance of such weather occasions frequent relapses in all these diseases, and with other concurring causes, ultimately breaks the constitution. It would appear that a hot and dry season does not occasion so many of these relapses, and consequently were it to continue would not lay the foundation of so many chronic diseases, but it undoubtedly

exerts a powerful influence in the formation of dangerous remittents."

In the foregoing reports, the causes which give rise to fevers and other diseases in warm climates are introduced without any regard to order or arrangement, but according as they occurred to the observation of the author. In the following report, which followed the preceding in point of time as it does here in point of arrangement, the progressive ravages of a tropical climate on the constitutions of European soldiers were attempted to be pourtrayed. This report was transmitted in June 1817, and although some of the observations contained in it may also be found in the preceding reports, we think it will be found interesting, as it exhibits a view, in connexion with the preceding reports, of the successive gradations by which European constitutions are broken in tropical climates.

"The weather during the last quarter has been generally wet. The range of the thermometer varying from 80 to 86 in the shade at noon, and from 62 to 68 at gun-fire (five o'clock) in the morning; at which hour the greatest degree of cold is produced. The

atmosphere has been damp and loaded with exhalation and evaporation, occasioned by the great luxuriance of vegetation at this post, which affords an inexhaustible source for vegetable putrefaction.

"The hospital was continually crowded, as may be seen by the returns; the fevers generally of the intermittent form, and principally happening among the weakly and debilitated men, whose constitutions had suffered from former attacks of diseases. The diseases in the returns are always designated by the name of that which was the most prominent on admission, or became so in the course of their treatment; but although it was considered necessary to give them some particular designation, a complication of diseases was generally present in the same individual. There is no term for any one disease sufficiently comprehensive to be applied to that state of constitution which succeeds to repeated attacks of disease at this post. It comprises all the various forms of disease that would appear to have been contemplated by Cullen in his class "Cachexiæ." An attack of intermittent is frequently combined with dysentery, and anasarca or ascites, or both; and examination after death will probably show that hydrothorax might have been added to this list of diseases.

The cellular membrane over the whole surface of the body is distended with fluid, and the cells filled with fat of a peculiar white colour, which gives to the skin that sallow and bloated appearance remarkable in this disease. Dissection has shown that, in this state of the constitution, the heart has lost its muscularity; the ventricles on pressure present no muscular resistance, but suffer their sides to close together like a pouch or membranous sac. Would it not appear from this want of muscularity in the heart, that it could not have given to the blood the impetus necessary to propel it into the extreme vessels, and that the powers of life had been gradually oppressed for the want of action in the circulating system?

"In the treatment of these men, various remedies have been tried, but after repeated attacks, the constitution broken at length sinks. Squills, combined with calomel and opium, have frequently reduced the dropsical swellings, but they generally return. This mode of treatment however appears to do more good than any other that has been tried. After the swellings are removed, bitters are used with benefit. Colombo, gentian, extract of bark, tinct. muriatis ferri, &c. agreed best with the patients. Digitalis was tried, but I think without benefit. As it is calculated to

lower the action of an organ, which by dissection appears in these cases to have been already too low, it might be worse than useless, and has been consequently laid aside. The use of nitric acid mixed with water has been suggested and tried. It disagreed with all who took it, generally occasioning griping and an increase of the dysenteric symptoms: it was of course discontinued. The kernel of a nut which grows in this island, and is known by the name of the "sequa nut," is much extolled by the Spanish part of the inhabitants, as an effectual cure for intermittent fevers and their consequences. Its taste is nauseous and bitter. Its direct effects are nausea and general sickness. This nut we have also tried, in the manner recommended, that is in the form of a spirituous tincture, but we could not observe it to produce any of those beneficial effects for which it has been celebrated by the Spaniards.

"This broken state of the constitution is occasioned among the men by intemperance persevered in, together with the chills and damps of this post. So bad are the barracks, that even in his hammock the soldier has no security against the damp and wet. The rain passes through the roof, while the planks which form the floor, being in contact with

the earth, have rotted in several places, and admit from beneath them a damp and unwholesome exhalation. A soldier, returning to such barracks after an attack of sickness, is subjected to the same causes and inconveniencies which had first occasioned his disease; and under such circumstances a return to perfect health can scarcely be expected. After recovering from sickness, if a cruise could be allowed, or at least a removal to a drier and purer atmosphere, these relapses might probably be prevented."

We shall now insert a copy of the last report which we intend to introduce for the illustration of tropical diseases. This report was transmitted in consequence of a fever that raged in Trinidad in 1817, and which we have reason to think was as destructive in its ravages as any fever that ever before devastated that devoted country. Should any, in reading this report and viewing it through the indifference which security inspires, imagine that the circumstances attending it are dwelt on with too much minuteness, or that too much importance is attached to any of them, let them consider, that the author was not only on the spot and sharing the common danger, but we also wish them to know that at the

time of writing this report he was slowly recovering from a severe attack of the very disease which he describes.

" In the beginning of August, 1817, a fever of most malignant character made its appearance in the island of Trinidad. The town of Port of Spain, the capital and seat of government, was the first, and continued to be the chief theatre of its devastations. The governor of the colony, and some gentlemen who held official places under the government, were among the first that were attacked with the fever. The florid and plethoric were chiefly the subjects of its attacks, and particularly the newly-arrived Europeans; but no length of residence in the island appeared to afford much security against the disease, as very few escaped its attacks, however long resident in the colony. The fever however appeared less aggravated in such as had been long in the country; the newly-arrived European, whenever attacked, had but little chance of recovery. The average proportion of deaths, in the town of Port of Spain, I have heard estimated at twenty daily. This proportion is probably too great; it however appears that, in the course of about four months, from the first appearance of the fever, about eight hundred

persons had fallen victims to it in the town and environs of Port of Spain!

"The general prevalence of the fever suggested the idea of contagion; and the dreadful mortality that attended it, gave a most melancholy impression of its malignant nature, and cast a general gloom over society. In town, the duties of government were suspended, the stores and places of business were shut up, trade appeared to cease, all considerations of future benefit gave way to anxiety for present security; such as had acquaintances in the country abandoned the town; a stillness pervaded the whole, but it was the stillness of fear and alarm!

"As the medical practitioners of the colony, as well as the military medical officers in the island, were divided in opinion respecting the contagious or non-contagious nature of the fever, it may not be uninteresting to notice such circumstances as appear to be connected with this view of the subject.

"The fever, on its first appearance, was said to be confined to one particular street, and even to a particular part of that street, and gradually to have spread itself from thence to other parts of the town. In whatever house the disease appeared, it generally continued there until it had passed through all the mem-

bers of the family, or all the persons inhabiting that house. In the military hospital at Orange Grove, in the suburbs of the town, all the European soldiers that acted as orderlies or attendants on the sick were seized with the fever. Many of the civilian medical practitioners in town were also attacked with it; and every European medical officer in the colony, without exception, in the course of about two months from the first appearance of the fever, had suffered one or more attacks of the disease.

"From these facts, a strong presumption may be inferred in favour of the opinion that this fever was contagious; and it would appear that the point must be conceded in favour of that opinion, unless the following causes should be considered capable of occasioning the facts before mentioned, independent of contagion.

"The weather, during the prevalence of the fever, was different from what the oldest inhabitants of the island could remember ever to have witnessed there. The thermometer in the shade, at St. Joseph's, often rising as high as 89 degrees, averaging about six or seven degrees higher than the usual temperature of the place. The thermometer at Port of Spain varying from 96 to 98 in the shade, between the hours of one and three o'clock

in the afternoon, at which time the greatest degree of heat is experienced. The temperature of Port of Spain exceeds that of St. Joseph's generally about six or seven degrees, although the distance between the two places does not exceed seven miles. During the whole of the period, occasional showers of rain were succeeded by a scorching sun, a sultry and oppressive heat, and a total stagnation of the atmosphere.

"The island of Trinidad is a low marshy soil, particularly in the vicinity of Port of Spain and St. Joseph's. The face of the country is covered with trees and brushwood, and in every part of it there is the greatest luxuriance of vegetation. The action of a scorching sun on decayed and decaying vegetation, together with the moisture supplied by occasional showers of rain, necessarily kept up a continual putrefaction of vegetable matter; whilst not a breath of air communicated motion to the atmosphere, which thus continued saturated with noxious exhalations.

"In addition to these causes of unhealthiness, which at this time applied generally to to the island, there were some local causes that applied particularly to Port of Spain. An immense marsh or swamp extends from the town along the south coast of the island:

in the usual course of the wind from the eastward and northward, the town is not subject to the influence of this marsh; but during the period of the sickness in town, whenever the stillness of the atmosphere was interrupted by a breeze, the wind continually blew from the south and south-east, and sweeping over a marsh of about four hundred square miles, carried to the town its noxious exhalations.

"The government of the colony had about this time been engaged in paving the streets of Port of Spain, in digging new beds for rivers about the town that had recently been choked up by torrents of rain; and also in making and repairing wharfs on that side of the town which, by the change of direction of the wind, was now the windward side, and over which the south and south-east winds blew from the great marsh before mentioned. The town itself is built on an alluvial soil, consisting of vegetable and other matter easily undergoing decomposition, and which, when turned up and exposed to the combined action of the sun's heat and oxygen of the atmosphere, was necessarily thrown into a state of active putrefaction.

"Let us now consider the causes of disease which existed at the time the fever commenced, and see how far they may be considered ca-

pable of occasioning the facts before mentioned. The fever, I understand, first made its appearance in a street near the wharf, and in the immediate course or current of the wind blowing from the marsh, and which must have arrived at this particular point impregnated with the miasmata arising from the marsh, and further loaded with the noxious exhalations occasioned by the exposure of an alluvial soil. This street was crowded with Spaniards, from the Spanish main, in a deplorable state of misery and wretchedness. On such subjects, and under such circumstances, the causes of fever were likely to operate with double effect. Here the fever commenced, and from hence it spread to almost every part of the town—here the effluvium arising from the bodies of the sick, the dead and the dying, congregated together in a state at which humanity shudders, was added to the other noxious gases with which, as has already been shown, the atmosphere was at this time impregnated. If we add to this, that in the course of the mortality occasioned by the fever, about twenty graves were daily opened or new ones dug in the burial ground in the immediate vicinity of Port of Spain, it will be easily perceived, that the atmosphere generally throughout the town

must soon have become impregnated, or rather saturated with every noxious gas or exhalation capable of generating the seeds of disease.

"Were I required to give an opinion whether the fever in Trinidad was contagious or not, I should be greatly at a loss what opinion to give, although I had the fever myself at the time, and although I endeavoured to notice every circumstance which I considered might be likely to throw any light on this debated question. That the causes of the fever existed in the island I believe, and that it was not occasioned by contagion or infection imported from any other place. If by contagion is meant the communication of fever by contact, I do not think the fever at Trinidad to have been contagious. But if by contagion we are to understand the accumulation or concentration of causes, capable of inducing the action of fever, then the fever at Trinidad might be considered contagious; for it appears to me, that when the atmosphere of a whole town is loaded with noxious effluvia, as has already been mentioned to have been the case in Port of Spain, that the putrid exhalations arising from human bodies in the apartments of the sick and the dying, superadded to such an atmosphere, will be likely to accelerate the febrile action; and consequently that in the

apartments of the sick, a person is more susceptible of the disease than elsewhere, as there the atmosphere must be more impure, and the causes of fever more concentrated.

" With respect to the character of the fever, I had no opportunity of making any personal observations on it in Port of Spain, but from the accounts of such as have had that opportunity, and from the general fatality that attended it, it appears to have been most malignant. At Saint Joseph's, its approaches were marked by an unaccountable uneasiness and restlessness, a sense of unhappiness, without pain or sickness or any assignable cause ; this was succeeded by a wandering of intellect, and an impossibility of fixing the attention on any subject, even for a few minutes. In a short time the pulse became quickened, with a flushing of the face, and throbbing of the temporal arteries, attended with rigors : a slight delirium probably ensued, with nausea, thirst, and general excitement. In about twenty-four hours these symptoms were succeeded by great prostration of strength, the pulse sunk below the natural standard, and became feeble even where bleeding had not been resorted to. From this period debility and faintness were the prominent features. In some cases, an effusion took place, tinging

the skin and eyes of a deep yellow colour. This symptom however was by no means general, and although it certainly attended the most aggravated cases, it could not be considered a fatal symptom. The patients generally remained sensible throughout the disease. When it terminated fatally, it usually happened on the third or fourth day—sometimes earlier. A suppression of urine sometimes occurred, and whenever it happened the case terminated fatally. In many cases, what has been called the "black vomit" took place: this symptom did not attend all the fatal cases, but wherever it happened it might be considered a fatal symptom.

"This fever was generally considered what is called by writers on tropical diseases, "the genuine Yellow Fever of the West Indies." And in those cases in which a suffusion took place, the term yellow fever is very expressive of its appearance. But as this symptom did not always occur, and when it did was not always a fatal one, and as many cases happened of the most aggravated description where not the slightest tinge or suffusion appeared, the term yellow fever cannot with strict propriety be applied to it. Having carefully considered the form and character of this fever, the symptoms and progress of it, where

suffusion took place and where this symptom did not occur, I conceive that it differs only in degree from the common endemic fever of Trinidad; cases of which will always be met with there, even during what they consider their most healthy seasons. In other words, that it was merely an aggravated form of the common bilious remittent fever of the island, and arising from the same sources, accumulated and concentrated by the causes already mentioned.

"The great mortality that attended the fever in the town of Port of Spain occasioned, I believe, a deviation from the usual modes of treatment. The medical practitioners, finding their usual remedies baffled, and their patients sinking before they themselves had any idea of their danger, thought it necessary to resort to more powerful remedies to combat such a formidable disease. The public also, alarmed at the want of success of the medical practitioners, looked out for such as would apply new and desperate remedies, so that it became a field of experiment and competition. The opposite principles of depletion and of stimulation were adopted by different practitioners. The one party bled and purged, and kept the patient as low as possible, and frequently continued to do so till the stomach had lost

its tone, and the introduction of nourishment to support the exhaustion of the system became impossible. After the patient had lost one hundred or more ounces of blood, and taken two hundred or more grains of calomel, nourishment was allowed him, but then it was generally too late! the stomach rejected it. Such as adopted this mode of treatment, generally complained that their patients sunk after the fever had been removed!

"The treatment by stimulation has, on the other hand, been carried to an extent, I suppose, unheard of. Three bottles of brandy have been given to a patient in twenty hours, and the same proportion continued for several days. This treatment, I understand, has been in several cases successful, where the fever had assumed a very unfavourable aspect. I have myself seen a gentleman who recovered, with whom this treatment had been adopted. Although this circumstance does not prove that such patients might not have been saved by remedies less violent, it shows us that the system, while under the influence of fever, can bear the operation of powerful stimuli without their producing a fatal result.

"The mortality occasioned by the fever among the troops was by no means so great as among the inhabitants, although the increase

of sick among the military was to a most melancholy extent. It is true that the European troops were stationed at St. Joseph's and at Fort George, each post about seven miles from Port of Spain, and it is probable that the cases of fever which occurred at these stations were not of so aggravated a character as those which happened in Port of Spain. In the beginning of the sickly season, the number of sick in the regimental hospital of the Royal York Rangers at Saint Joseph's amounted to fifty-four, the whole number of the regiment then present in the island being four hundred and eighty, and in about twenty days from that period the list of sick had increased to one hundred and twenty, almost the whole of them being cases of fever. This increase of sickness at Saint Joseph's may serve to show that the fever must have been occasioned by causes that generally affected the island, although, as we have already remarked, some local causes in town, superadded to these general ones, may have occasioned there a more aggravated and concentrated form of the disease.

"This fever, as it appeared among the Royal York Rangers at Saint Joseph's, did not bear the evacuations of blood-letting and purging so well as the fevers that had usually occurred in the regiment at that station.

Whatever mode of treatment had been adopted at the beginning, debility and faintness, with a sinking of the pulse, and a general relaxation of the vital energies, were the leading features of the disease after about twenty-four or thirty hours from the first attack. And where powerful purgatives and copious bleeding had been practised in the beginning, these symptoms appeared in a more aggravated form. The following treatment was found particularly successful. After bleeding, where it was considered necessary, to evacuate well the bowels with calomel combined with cathartic extract, and assisted by a solution of neutral salts; afterwards, to moderate the irritability of the system with opiates; to keep the bowels moderately open with occasional purgatives; to give frequently some nourishment, such as soup or arrow-root mixed with Madeira wine; and by alternating nourishment and wine with purgatives and enemas, to endeavour to maintain a balance in the system, so as to prevent violent reaction on the one hand, and on the other to support the action of the stomach and intestines, by a succession of moderate stimuli. Whenever the pulse began to flag, and the patient to sink, which as I before mentioned usually happened in thirty hours or less from the first attack, blisters were applied

to the stomach and shoulders, cataplasms of the capsicum annuum to the feet and legs, and boluses of camphor and opium were given internally. Nourishment was also given frequently, and the quantity of wine increased, unless it happened to disagree with the stomach, in which case, brandy and water was substituted for it. The quantity of wine it was seldom necessary to increase to more than a pint in twenty-four hours, but the great object was to cause a little to be taken frequently; as experience had shown, that unless the action of the stomach were kept up by frequently introducing something not likely to disagree with it, its tone was shortly destroyed—its action ceased—and with it its influence on the system—the powers of life appeared gradually to cease, as if for want of something to give motion to the circulating fluids. Absorption and suffusion took place; black and fœtid bile was ejected from the stomach, probably not by its own action, but by the inverted action of the intestines, whose irritability overcame the feeble resistance of that organ, and the unfortunate sufferer became absolutely putrid a considerable time before dissolution had taken place.

"In about two months, eighty cases of this fever were treated in the regimental hospital of

the Royal York Rangers. Of this number, five died—all the others have perfectly recovered. It is true, that all these cases of fever were not equally severe. Among them might be seen every variety of shade or difference, from the common remittent fever of the climate to the most aggravated and malignant form of "yellow fever." There were many of these cases particularly severe, the whole however I considered of the same description, differing from each other only in degree of mildness or of malignity.

"Among those that fell victims to this disease among the military was Mr. Safe, surgeon to the forces, and principal medical officer in the colony. He resided in Port of Spain, and had a considerable share of the practice which this melancholy season but too extensively afforded there. He had made considerable exertions in the discharge of his public and private duties, which no doubt contributed to the fatal termination of his disease. He was a man of mild and amiable manners, and an example of the most rigid abstemiousness in his habits of living: he afforded a melancholy proof, that habits the most regular, and temperance the most resolute, although always praiseworthy, afford but a feeble protection

against the aggravated forms of West-India fever!

"To doubt the efficacy of mercury, in the cure of the fever of the West Indies, may appear extraordinary: a medicine now so generally employed, and carried to such an extent, as almost to supersede all others in the treatment of this disease: a remedy so much admired by some practitioners, that I have heard one assert, that he had given to a patient two hundred grains of calomel in about forty-eight hours! The following circumstances, however, together with an impartial attention to its effects, induce me to doubt whether mercury be entitled to the great praises lavished on it in the cure of this disease, and the great reliance placed on it, to the almost total exclusion of other remedies.

"That the action of mercury on the system does not supersede the action of fever, every medical officer must have seen who has had charge of an hospital in the West Indies. There may frequently be seen patients dying of fever while under the influence of mercury —there may be observed the fatal termination of the disease to take place, during any stage of the effects of this medicine, from a slight soreness of the gums to the most saturated

stage of ptyalism. I have seen persons using mercury for the cure of other diseases, and while ptyalism was present, attacked with fever and die of it. In such cases it also appeared that the progress to putrefaction, during the disease and after death, was even more rapid than in ordinary cases. I have seen a medical gentleman, a great admirer of mercury, who, during the prevalence of a malignant fever, took three grains of calomel every day, by way of securing himself against the disease: this gentleman was attacked with the fever and died. With so many instances of, at least, its want of success, in the removal or prevention of fever, is it not reasonable to doubt its right to the unqualified praises bestowed on this remedy?

" Let us not however deprive this medicine of that degree of credit to which it is entitled in the treatment of West-India fever. There is no other medicine which can be given as a purgative, that will produce so good an effect in so small a dose. And when the stomach is incapable of retaining any other purgative, a small quantity of calomel will in general be retained. Having seen the inefficacy of mercurial ointment, used as rapidly as possible, and successfully, so far as producing ptyalism; and having also repeatedly seen calomel thrown

in, in large quantities, with the same view of inducing the action of mercury in the system—fail in removing the fever, and greatly increase the symptoms of faintness and exhaustion, I am much inclined to think that mercury, used with the view of saturating the system in fever, has very little effect in curing the disease, and that its beneficial effects principally depend on its action as a purgative. Should we give calomel in fever, without having any confidence in its specific powers, and merely with a view to its action as a purgative, it can never be necessary with that view to give so large a quantity as two hundred grains, a quantity which I suppose a European practitioner would think likely to injure even a strong constitution. With a view to its purgative effects, it will seldom be necessary to exceed ten grains for a dose. This quantity, combined with as much extract. colocynth. comp. and assisted by a solution of neutral salts, will in general produce the desired effect. Such a dose may be given, if necessary, three or four times within forty-eight hours from the first attack of fever, and after that period it was found, at Saint Joseph's, more necessary to support the patient than to exhaust him by more purging medicine. If calomel be given with this view, it will seldom be necessary,

and perhaps never adviseable to give more than about forty grains in the course of the disease. I have seen such a degree of faintness and exhaustion succeed even to such moderate doses as I have mentioned, that the pulse became almost imperceptible, and all the other functions were equally enfeebled. It was only by giving the patient frequently a little toasted bread, dipped in Madeira wine, that the action of the stomach was restored—that the pulse was raised—and that some degree of energy was again communicated to all the vital functions. The patient recovered, but it is probable, had a greater quantity of medicine been given, and a proportionately greater degree of exhaustion produced, that the vital energies would have been so far deprived of their renovating powers, that no stimuli, however powerful, could again have called them into action."

PART THE SECOND.

REVIEW OF THE CAUSES OF DISEASE

Mentioned in the foregoing Reports;

TOGETHER WITH THE

TREATMENT OF WEST-INDIA OR YELLOW FEVER.

IN the foregoing Reports will be found noticed most of, if not all, the causes which influence the health of Europeans in tropical climates; and occasion not only the fatal fevers of these countries, but also a catalogue of other diseases, such as dysentery, hepatitis, pneumonia, anasarca, &c. &c. which, should they not prove fatal in their first attacks, ultimately break the constitution, and leave their unfortunate victims valetudinarians for life. These causes may be divided into two classes; the first regard the individual personally, and refer to the habits of life and constitution of mind, such as intemperance,

dissipation, fear, anxiety, &c.; the other, to the agents by which he is surrounded, and regard the heat of the climate and constitution of the atmosphere, as influenced by the vicissitudes of temperature, and the noxious effluvia and exhalations with which it is too frequently impregnated.

With respect to the first class, or what we shall call the moral causes of fever, and which, by weakening the balance between the nervous and vascular systems, render the body susceptible of the impressions of disease when exposed to an unhealthy atmosphere, we shall here introduce a few observations which were offered by the author on this subject in his inaugural thesis. The following is a translation.

"Of the powerful influence of the mind and imagination in the production and propagation of disease, I have myself seen many instances in the army of the West Indies. The terror with which the fever of that climate is contemplated by many on joining the army there, induces a feeling amounting to desperation. They think that to avoid it is absolutely impossible, and consequently they cannot be prevailed upon to subject their passions to any restraint, which, agreeably to their mode

of thinking, would be useless. Under these impressions, they launch into the extremes of intemperance and dissipation, and indulge in excesses which in any country or climate would ruin the constitution, until in the end they are really overtaken by that disease which their own imaginations had represented to them the impossibility of escaping.

"That fear and apprehension are the only causes of this disease, and consequently that it is occasioned only by the influence of the mind, I do not intend to assert: a variety of other causes might be mentioned, but as the opinion which is too generally entertained, that to avoid the disease is impossible, induces many to have recourse to intoxicating liquors, the usual tranquillisers of uncomfortable minds, intemperance and dissipation, which are the principal moral causes, are thus indirectly occasioned by apprehension and fear.

"The fever of the West Indies is a formidable disease, and the mortality that attends it is a sufficient evidence that it possesses but too much of real danger; it were fortunate however for the army, that it were stripped of imaginary terrors. The name "yellow fever" sounds like a death bell or signal of destruction in the ears of young men on arriving in that country. I knew many who in the field could

meet danger and even death without apparent emotion, appalled by the idea of this disease; and who, amidst all the inconveniencies, fatigues and privations of active service, were only alarmed by the prospective possibility of being attacked by the yellow fever.

"How far the influence of the mind and imagination may extend in occasioning this fever, independently of the moral causes already mentioned, would be a subject perhaps of difficult speculation. There are symptoms or manifestations of fear, which may be observed in many individuals in cases of ordinary danger, or where danger is supposed to exist, which would appear to bear a great resemblance to many of the symptoms that mark the approaches of the fever of the West Indies. The coincidence it may not be uninteresting to trace.

"The mind, labouring under the influence of fear, would appear to shrink within itself, as if to retire from danger, which sometimes may exist and may be often of its own creation. The visible effect of this emotion is a paleness of the face, a shrinking of the features, and a general shuddering throughout the system. The blood is driven from the vessels on the surface, or perhaps retires to the internal and vital organs, where a concentration of all the

powers of life may at this time be necessary to resist the impression arising from the mind.

" We shall now consider some of the symptoms that characterize the beginning or first accession of the fever of the West Indies. The approaches of this fever are marked by an unaccountable restlessness and uneasiness, a sense of unhappiness without pain or sickness, or any assignable cause. If the features of the face be attentively viewed, they will be observed occasionally to shrink and become contracted, at the same time a shuddering or rigor pervades the frame, appearing to commence in the face, and to proceed down the back, following the course of the medulla spinalis. The expression of this rigor is certainly first observable in the face, it is reasonable however to suppose that it originates in the sensorium commune, and is only manifested in the face as it is in other parts through the medium of nervous communication. That the intensity of the impressions communicated to any given part is in proportion to the number of nerves with which it is supplied, would appear probable from the greater degree of shuddering and rigor which is always experienced in the back and region of the loins.

" A further resemblance might also be observed between the effects produced by the

emotion of fear and by this disease, on different individuals, as their minds happen to be differently constituted, that is, possessed of more or less of energy or of weakness.

"The mind would appear to possess within itself the power of silencing or at least of suppressing the suggestions of fear, by summoning to its assistance some of its higher and nobler qualities. It is capable of forming a determination or resolution to oppose or withstand danger, and this resolution being once fixed, whatever may have been the motives that determined the mind, it will no longer attend to the suggestions of fear. Various motives may in different individuals conspire to this determination. In some perhaps an innate conscious pride, where the mind had been accustomed to look only to itself for the standard of its own actions: but with by far the greater number it is public opinion which thus determines the mind. In many individuals however this firmness of mind will not be exerted, whether it is that they are incapable of so much energy, or that the motives which on similar occasions would determine others, with them are not sufficiently powerful; or, what is more likely, that they imagine themselves to be under the influence of an impulse which they suppose to be irre-

sistable, and consequently they will make no effort to resist. Whatever may be the true cause, and whether the mind in every individual is capable of determining its own conduct, or of resisting the emotion of fear by an exertion of its own powers, or whether from some peculiarities of constitution there are individuals in whom the impulse of this emotion is irresistable, it will be sufficient for our present enquiry to distinguish these different qualities of mind by the names of energy and weakness. The susceptibility then to the fever of the West Indies, and also the results of the disease where it does occur, are powerfully influenced by these different constitutions of mind. I have seldom seen any one who, on arriving in the West Indies, was strongly impressed with fear or horror of the yellow fever, who escaped an attack of that disease: and the danger which attended it appeared to bear at least a certain proportion to the degree of this apprehension, whatever might have been the constitution or habits of the individuals. They appeared to be attacked with the fever because they thought to avoid it was impossible; from its first accession they despaired of recovery, and their fears were too frequently realized."

By introducing the above observations on the influence of the mind, the author wishes to shew that the moral causes therein mentioned have a great effect, if not in directly occasioning the fever of the West Indies, at least in inducing such a state of the system as will render it liable to be acted on by the acknowledged, or what in contra-distinction may be called the physical, causes of this disease. Although these causes have already been mentioned in several parts of the reports which have been introduced, we think them deserving a little further consideration.

That marsh miasmata, or, in other words, that the exhalations arising from the decomposition of vegetable and frequently also of animal substances, are the principal causes of the fever of tropical climates, appears to be agreed on by most of those who have written on the subject; and notwithstanding the controversies which have been maintained, respecting the causes of some particular forms of this fever, it is probable that the difference of opinion consists more in a name, than in any real and essential distinction between the causes assigned. We here allude to the arguments which have been advanced for and against contagion, as the cause of what has been

called " bulam fever," and also of the " yellow fever" of the West Indies.

Dr. Bancroft, who has so ably investigated the subject, and who has accumulated such a mass of evidence in favour of his opinion of the non-contagious nature of this fever, refers the cause of the epidemics of warm climates to particular states of the atmosphere, occasioned by the combined operation of heat and moisture on extensive tracts of marshy ground, or on soils which under such circumstances undergo decomposition, and impregnate the atmosphere with noxious exhalations. Such is also the opinion both of Dr. Jackson and of Dr. Fergusson, than whom there can be no better nor higher authority, whether we consider the high professional attainments of these eminent physicians, or the opportunities afforded them by their official situation, both having at different periods filled the important situation of inspector of hospitals in the army of the West Indies; by which means they not only had an opportunity of observing the progress of this fever in all the military hospitals of that country, but as they also received and transmitted the reports of the other medical officers, they had an opportunity of ascertaining their respective opinions. That such is the opinion of the author, will be seen by

the reports which have been introduced; and such he has reason to believe is also the opinion of most of the other medical officers who at the same time composed the staff of the West Indies.

Let us now consider this acknowledged cause by abstraction. It is something, which, arising from vegetable and animal substances when undergoing decomposition, is floated or suspended in, or chemically combined with the surrounding atmosphere, and being applied to the human body under certain conditions, or what may be called a state of susceptibility, excites in the individual the action of fever.

Of the nature of this effluvium or exhalation we know but little. Chemistry has analysed and given different denominations to the several gases which are the product of this decomposition; but whether one or all, or modified combinations of these elementary principles, is the efficient cause of the fever, it matters not by what name it is designated, or whether it be expressed under the usual denomination of marsh miasma, or be called a fever-exciting contagion.

This miasma, exhalation, or contagion, is possessed of certain characteristic and sensible qualities. It is highly offensive to the smell, and if respired or introduced into the stomach

in a state of great concentration, that is, where the causes producing it are greatly accumulated, it occasions nausea and general sickness; and by disturbing the balance between the nervous and vascular systems, weakens the energies of the brain, and produces a feeling of debility and restless anxiety.

In the epidemic of Trinidad, in 1817, which is described in the last report, the author had an opportunity of attending to these physical changes of the atmosphere, in consequence of the accumulation of the causes of fever. In the course of the epidemic, it became so impure and offensive in the town of Port of Spain, that respiration was difficult, and frequently excited nausea. The slightest motion was not perceptible in the surrounding atmosphere, so that every portion of it remained saturated with noxious exhalations.

Dr. Pym, and the others who with him are of opinion that the fever termed "bulam," and also the yellow fever of the West Indies, are specifically different from the common fevers of warm climates, suppose that these particular forms of the disease are always occasioned by imported contagion; and applying to them a law which operates pretty generally in some other specific diseases, they suppose that one attack of this specific form

of fever secures the constitution for life from a return of the same disease. Not wishing to enter into the consideration of a subject which has already been so ably discussed by Dr. Bancroft, we shall merely observe that, even were the contagious nature of this fever admitted, the security said to be afforded to the constitution by one of its attacks by no means accords with our own observation or experience. What we wish more particularly to consider, is the distinction which is made between the cause of fever which is called marsh miasma, and that effluvium which, arising from the human body when affected by what is called a contagious fever, and conveyed through the medium of the surrounding atmosphere, excites in another the action of fever.

Of the chemical nature of this human contagion we know as little as we do of marsh miasma. If we consider it abstractedly, it is an effluvium arising from the bodies of persons labouring under fever, and which is capable of exciting in others the febrile action; but of the origin of this contagion we are not sufficiently informed. The mind does not rest satisfied with the bare assertion that this contagion has been imported or conveyed by individuals, or by substances supposed capable of retaining its pernicious qualities; we wish

to be informed of the production and commencement of this contagion, and here again we cannot avoid supposing a local origin and an efficient cause; so that our enquiries must therefore naturally lead us to examine where this contagion had its origin, and what were the causes that produced it.

To be told that a fever, which rages epidemically in any place, is occasioned by contagion imported from another, affords no satisfactory explanation; the mind still requires a particular period and place when and where the disease has had its commencement.

Neither does it appear to us satisfactory to be told, that contagious fevers must always exist merely on the principle of contagious propagation. That is, that there are always individuals affected with such fevers, which, through the intercourse and mutual offices of society, must necessarily be communicated to others, and thus be propagated in endless succession. The difficulty does not consist in the principle of propagation, but in tracing to its origin the efficient cause. We are still obliged to recur to a period and place of commencement, and we must then imagine it to have been independent of personal contagion.

That the exhalation arising from the bodies of persons labouring under particular forms of

fever, that inhaling their breath, and continuing long in the same confined atmosphere, are circumstances capable of producing the fever in others, is a fact respecting which there is but little difference of opinion. That the exhalation or effluvium called marsh miasma is capable of producing the same effect is equally true, and appears to be even more generally admitted. In both cases it is an effluvium or emanation from animal or vegetable matter that produces this effect, and we cannot see any reason why, in one case as well as in the other, the cause which produces the fever should not be called a fever-exciting contagion.

Dr. Bancroft endeavours to establish a strong line of distinction between these two causes of fever, and strongly reprobates the opinion that fevers, which had first arisen from local causes, should afterwards be extended by contagious propagation. Should these causes of fever be really as distinct in their nature as Dr. Bancroft appears in his own mind to be fully convinced of, his reasoning would be right. He thinks, where we have one cause capable of producing the disease, that it is unphilosophical to admit the agency of others. "Frustra fit per plura quod fit per pauciora;" but according to the views which we have

ventured to take of these causes of fever, the miasma from marshes, and the emanation from the human body, may be considered in their effects and their physical qualities to be nearly alike, and may either of them excite the action of fever, and the presence of both of them may be occasioned by an accumulation of sick in marshy situations, and may there give rise to what we would consider a concentrated contagion.

That such a state of the atmosphere existed in the town of Port of Spain, in the advanced stage of the epidemic of 1817, the author is inclined to believe, although he did not then nor does he now think that fever to have been contagious in the sense in which "contagious" is usually taken; but if contagion be simply considered an effluvium or emanation from a body, belonging to the animal or vegetable kingdoms, suspended in, or chemically combined with the atmospheric air, and capable of exciting the action of fever, then the author feels assured that the accumulation of sick in the town of Port of Spain, in the advanced stages of that epidemic, considerably increased the intensity of that contagion.

Whatever may be the difference, chemical or physical, between marsh miasma and that emanation from the human body which is con-

sidered contagion, they appear to be nearly alike in their modes of operation. Every individual who is exposed to marsh exhalations is not invariably in consequence attacked with fever; nor does every one who approaches the bed of a patient labouring under contagious fever become infected with the disease. A certain state of the body, which for want of more clearly understanding it we term a state of susceptibility, appears necessary in both cases to give effect to the exciting cause. To understand in what this state of susceptibility consists appears difficult, and here we are again obliged to have recourse to the moral causes of the disease. The influence of habit on the animal economy, has long been observed and acknowledged by physicians, but still this is merely the expression of a fact, and affords no explanation whatever of the fact itself. To be told that people, accustomed to marshy situations or to the confined atmosphere of a patient's room, are less likely than others to be affected by an exposure to these causes of fever, is merely to be told a fact which has been ascertained by observation and experience, but we are still in the dark with regard to the cause. To recur to what we before introduced on the subject of moral causes, it would appear that in all these

instances the mind exercises a powerful influence, and whatever causes lower its energy and powers increase the susceptibility to the disease. If a person is casually introduced within the sphere of influence of a contagious fever, should the circumstance be entirely unknown to him, it is probable and nearly certain that he will escape the contagion; but should the atmosphere of the place be offensive to the organs of smell, and at the moment that this was perceived by the individual, should it also be communicated to him that he was within the sphere of influence of a contagious fever, it is probable and almost certain that he will contract the disease. Confidence, in whatever way acquired, appears greatly to fortify the mind, and is in fact itself an acquired fortitude, and perhaps it is to the confidence which is acquired by habit, that we should ascribe its good effects in preventing disease. When a person is conscious of having been frequently exposed to danger with impunity, its appalling effects on the mind cease by degrees; as the veteran soldier who has frequently eluded death enters into action with comparative indifference, although in his first essay he might have been sensibly alive to the feelings of danger. In this way, a man who has long been accustomed to live in a marshy

situation and has escaped its pernicious effects, and a man who has attended with impunity patients labouring under contagious fevers, may from this circumstance acquire such a degree of confidence and composure as may in both these situations secure them from an attack of disease.

If we consider the question of contagion with reference to its effects on society, the opinion that a fever is contagious must certainly injure the individuals affected, by preventing those attentions from being paid to them which are dictated by a sense both of duty and humanity. On the other hand, the opinion that a fever which has originated in local causes, or in other words that a fever arising from marsh miasma, can in no instance be extended by contagious propagation, is also attended with considerable danger. If this opinion be admitted in its full extent, there are not sufficient motives to cause that attention to cleanliness which experience has shewn is the most effectual means of preventing and removing the infection of fever. Any doctrine which does not inculcate the necessity of cleanliness in fever, or which by attaching to it but little importance makes it only of secondary consideration, will be found of an injurious tendency to society. If we believe that a fever, which

has arisen from marsh exhalations, can in no instance or under no circumstances become contagious, we have not sufficient motives to prevent the accumulation of sick or to attend to ventilation and cleanliness.

Whether the modified view of contagion which we have given be founded in nature, or whether human contagion and marsh miasma are specifically and unapproachably distinct, must still remain a matter of opinion and a subject for further speculation; but with reference to the ultimate tendency of both these opinions, to consider the accumulation of fevers even from marsh miasma as capable of generating contagion will we conceive be attended with good effects to society, as the apprehension that such fevers may become contagious will occasion a greater attention to ventilation and cleanliness: and although we do not connect with the term contagion the same dangerous associations as have been usually connected with it by medical writers, we still are of opinion that it is useless and even dangerous to remain longer in the apartments of patients, ill of fever, than is absolutely necessary for their comfort and convenience.

TREATMENT OF WEST-INDIA FEVER.

Although the practice which we would recommend in the fever of the West Indies, and the principles on which that practice is founded, may be collected from the pathological views which are given in the commencement, and from the reports and cases that have been since introduced, we shall here give a connected view of what we consider should be the treatment of this formidable disease.

This fever is usually ushered in with rigors, shiverings, oppression about the prœcordia, a rapid succession of ill-connected ideas, laborious action of the heart and lungs, and throbbing of the temporal arteries. Here, whatever may have been the causes which produced the disease, whether it arises from marsh miasma or from human contagion, we may be certain that these symptoms are occasioned by an engorgement of blood in the brain, the lungs, and the organs in the epigastric centre, and our first attention should be directed to relieve these local engorgements. If we

look at the surface of the body, the face and extremities, we will see by the bloodless appearance of the face and the constricted state of the skin over the surface of the body, that the blood has forsaken the extreme vessels, and by attending to the symptoms above mentioned we must feel convinced that it is accumulated about the heart, and the other internal and vital organs. This engorgement of blood in the vital organs oppresses all the powers of life, and occasions the whole train of symptoms which characterize an attack of this disease.

That the impaired energy of the brain, which attends an attack of fever, is occasioned by an excess and not by a deficiency of blood in that organ, may we think be understood by attending to the ratio symptomatum and the feelings of the individuals affected. In syncope, which we know is occasioned by a deficiency of blood in the brain, the individual gradually loses both memory and recollection. Ideas would appear to recede by degrees from the mind, as the blood ceases to arrive in the organization of the brain; whereas in fever the rapid succession of ill-connected ideas, and the difficulty of attending to particular objects, shew that the quantity of blood passing through the organization of the brain oppresses its

powers and prevents the clear evolution of the cerebral influence. In fact, that indistinctness of thought and confusion of ideas are occasioned by a rapid succession of images, and that the functions of the brain are perverted by the rapidity with which they are performed.

To remove these engorgements of blood from the internal and vital organs is the first indication of cure, and to accomplish this there are two objects to which attention must be particularly directed. The first is to lessen the quantity of blood in the general system, and the second is to direct the remaining mass from the centre to the surface, from the internal and vital organs to the extremities and extreme vessels. Blood-letting then must be the first step in the treatment of this fever, and the quantity may in general be pretty large, as it is much better to take away at once a considerable quantity, than to be obliged to repeat the remedy at any subsequent stage: so rapid is the progress of this fever, and such are the changes that take place in the symptoms even within a short time, that bleeding, though at first the most powerful and most effective of all remedies, may become dangerous if performed at a subsequent period; and the author thinks, from his own observa-

tion and experience, that he is justified in recommending, as a general rule, that the bleeding should not be repeated. The first stage of this fever is a stage of great excitement, but in general the excitement ceases within forty-eight hours, and often much sooner, and is succeeded by a stage of exhaustion or collapse, which continues till the termination of the disease. Should the bleeding be repeated after the excitement has ceased, the author is convinced, by a full review and consideration of his own experience, that it may accelerate a fatal termination.

The quantity of blood which should be taken away will of course differ in different individuals, and must be regulated by the habit of body and the greater or lesser degree of excitement. Where bloodshot eyes, violent throbbing of the temporal and carotid arteries, anxiety, and difficulty of breathing, are present in a person in the prime of life and of a full plethoric habit, the quantity must be great indeed which will injure by its excess. From such a patient fifty or sixty ounces of blood may be taken away with the greatest confidence; and should the symptoms above mentioned not be removed by that quantity, it may be carried even further.

Where the determination of blood to the head is evidently very great, bleeding from the temporal artery will be found more effectual than bleeding from the arm; because, whilst it produces the same effect on the general system by more directly unloading the vessels of the brain, it may relieve the oppression of that important organ. It has been said that bleeding from the jugular vein will more directly unload the vessels of the brain than bleeding from the temporal artery, but a little attention to the anatomy of these vessels will shew the incorrectness of this opinion. As congestions of blood in the brain are supposed principally to take place in the venous sinuses, it is thought that by directly unloading the veins arising from these sinuses, engorgements of blood would be more effectually relieved than by intercepting a portion of it in its passage to the brain by opening the temporal artery. This reasoning would perhaps be correct, if blood could be taken away from the internal jugular vein, which receives it direct from the sinuses of the brain, but the external jugular, the only one that ever is or can be opened with safety, merely receives its blood from the external parts of the head, and has no connexion whatever with the sinuses

of the brain, nor can it in any way lessen the quantity of blood in the substance of the brain, unless by its effects on the general system; and consequently with the object of lessening the quantity of blood in that organ, it is not more effectual than bleeding from the arm; whereas, by taking away blood from the temporal artery, we may cause a greater quantity to pass through the external carotid, and thereby lessen the proportion directly transmitted by the internal carotid, into the pulpy substance of the brain. Besides the above anatomical reasons for bleeding from the temporal artery rather than from the jugular vein, there is another point of view under which it would appear to us to be also attended with greater advantages. In advanced life and apoplectic habits, the fulness of the vessels of the brain is probably occasioned by congestions in the veins and venous sinuses, but in fever, and particularly in the fever we are treating of, the affection of the head is not occasioned by fulness of the veins, but by great arterial excitement; and by taking away blood from the temporal artery, we lessen the impulse with which the remainder is transmitted to the brain, and may thus prevent effusions of coagulable lymph and serous effusions into

the ventricles, which are too frequently the consequence of this disease.

When the author had first an opportunity of witnessing this fever, which was in 1812, bleeding was seldom practised, either by the military or civil practitioners. The chief reliance was then placed on mercury, which was used in different forms by different practitioners, but by all with the view of inducing its specific action on the system. A circumstance which was observed with regard to the use of this medicine, occasioned it, we have reason to think, to be carried to an injurious extent. It had been observed, that in some of those who recovered from this fever, a copious ptyalism was occasioned by the mercury, and hence it was inferred and became a prevailing opinion, that the principal object to be aimed at was to produce this effect, which it was supposed would ensure the safety of the patient. That this opinion does not accord with the experience of the author has been already expressed in the report in which that circumstance is mentioned; but where the opinion was received and entertained, and the practitioner set about with all his zeal to produce as soon as possible this specific effect, we must see that the consequences could not

be unimportant; and that should he fail in removing the fever, an injurious effect must be produced on the system by large and frequent doses of this powerful medicine.

Dr. Jackson, who took charge of the medical department in 1812, drew the attention of the medical officers to the appearances on dissection, and by recommending and indeed requiring an examination of those that fell victims to the fever, he gradually removed the prejudice that had been entertained against bleeding; and if we take a comparative view of the ratio of mortality in fever before the arrival of Dr. Jackson and during the time he had charge of the department, we must feel convinced, by the diminished ratio of mortality during the latter period, that the practice which he introduced has been more successful than any that had before been adopted.

The author has not now within his reach documents to shew the ratio of mortality in fever during the periods to which he alludes, but the records of his own regimental hospital, as well as of all the other hospitals which he had an opportunity of examining, convinced him, before he left the West Indies in 1817, that the proportion of deaths from fever in that climate had considerably diminished since bleeding had been more generally practised.

The usual criterion by which the necessity for blood-letting is judged of, is the pulse, but we are convinced from observation that it is a very fallible guide. The pulse will certainly become full and strong where all the vital organs are capable of performing their functions, and any exciting cause produces general excitement, but should any of these organs be diseased, or by engorgements of blood rendered incapable of performing its appropriate function, the excitement occasioned by fever will not produce the same effect on the pulse. We have frequently observed in pneumonia, a disease in which of all others there is the least difference of opinion with regard to the use and necessity of bleeding, that the pulse is frequently slow, feeble and interrupted; and in fact such as in a more equivocal disease, or where blood-letting would appear of more doubtful utility, would deter from the use of the lancet. This effect on the pulse, in cases of pneumonia, is probably occasioned by the engorged state of the vessels of the lungs, by which the free dilatation of the ventricles of the heart is prevented, particularly of the ventricle of the right side, which labours to discharge its contents into the pulmonary artery, already too much distended, and transmitting with difficulty its contents through the

engorged substance of the lungs. In such cases we have observed the pulse to rise after bleeding, by which the engorgement of the lungs being removed, the heart resumes its natural freedom of action, and communicates to the pulse more regularity and force. The same state of the pulse will frequently be met with in this fever, and should we be guided by that only, it might induce us to think bleeding a doubtful or even a dangerous remedy. This state of the pulse in fever would appear also to be occasioned by engorgements of blood in some of the vital organs, more generally perhaps in the brain, and we have frequently had occasion to observe, that from a slow, compressed and irregular pulsation, it acquired both freedom and force after a full and a copious bleeding.

Next to blood-letting, in point of time, as it is also in point of importance, should be the exhibition of purgative medicines. There is nothing more indispensably necessary in the treatment of this fever than to open the bowels freely, and it is probable that the celebrity which mercury has obtained in the cure of this disease, should rather be attributed to the action of the submuriate on the intestines, than to any specific effect produced on the general system. The milder purgatives will

not be found sufficient in this fever, not being sufficiently powerful to stimulate the ducts and vessels of the biliary and alimentary system: the drastic purgatives must be therefore used. Ten grains of submuriate of mercury, and the same quantity extract. colocynth. comp. in the form of pills, for a dose, has been generally the purgative prescribed by the author. Half an ounce of sulphate of magnesia in about six ounces of water, may be given in about three hours after the pills, to assist their operation. As the full, free and speedy evacuation of the intestines is a point of the greatest importance, should the above quantity not produce the desired effect, the same, or half that quantity, according to circumstances, may be again given in the course of five or six hours; and indeed even should the first dose operate sufficiently, it should be repeated in about twelve hours, to secure the free and effective operation of the purgative.

We cannot too much inculcate the necessity of freely evacuating the bowels at the beginning of the fever, as it can then be done with safety and with great and decided advantage. But should it be neglected at the beginning, the operation of strong purgatives will neither be effective nor safe in the advanced stages of

the fever. The author would advise that all the purgatives which may be judged necessary should be given within forty-eight hours from the first attack, and that the bowels should afterwards be kept regular, either by enemas or the milder laxatives. In some cases, where the symptoms at the beginning of the fever were unusually severe, the author has given twice the above quantity of calomel; but still he is of opinion that that quantity is too great, and in giving it he was more influenced by the prejudice of fashion, and the recommendation of others, than by any conviction of the utility of or the necessity for so large a dose; and he is convinced, that ten grains of the submuriate, as before recommended, is quite sufficient, and that it is better to repeat that quantity at proper intervals than to exhibit so powerful a medicine in larger doses.

Two or three such doses as we have here recommended, will in general be found sufficient to secure the good effects of purgative remedies, and they should be given at proper intervals, and according to their effects, within about forty-eight hours from the commencement of the fever. During the operation of the purgatives, and in the intervals between the doses, some nourishment should be frequently given, for, from the effects of the

bleeding, purging, and the excitement of the disease, a considerable degree of exhaustion may be expected; and although no stimulants should be given at this stage of the fever, that exhaustion which attends a depletion and collapse of the vessels, should be obviated by mild nourishment and diluting drinks. For this purpose nothing can be better than arrow-root and barley-water; but as the stomach in these cases is extremely fastidious, and soon becomes cloyed with food and drinks, however judiciously they may have been directed or properly prepared, they should be varied to the taste of the patient; and with this view a little toast and tea, toasted-water, and rice-water, may be occasionally substituted. Animal food must of course be prohibited, but after the bowels have been well evacuated, a little light chicken broth may be allowed, and it will be found greatly to relieve the feeling of faintness and exhaustion occasioned by the operation of the purgative medicines.

The collapse or exhaustion that attends the last stages of this fever, will be in proportion to the degree of previous excitement. That is, distressing anxiety, agitation and delirium, in the beginning are likely to be followed by excessive debility, faintness and coma. The removal of fœces from the intestines, and the

stimulus afforded by the purgative medicine to the ducts and vessels of the liver, and other organs of the chylopoietic viscera, will greatly relieve the engorgements of the vital organs, and by promoting a free circulation through the system of the venæ cavæ, will lessen arterial action; and by thus shortening the stage of febrile excitement, will moderate the subsequent exhaustion and collapse.

One of the principal objects of attention, in this fever, should be to direct the current of blood from the centre to the surface. We have seldom seen a case prove fatal where the skin was soft and smooth, with a gentle warmth and moisture, or where the countenance was free and expanded. On the contrary, wherever the skin has continued dry and constricted throughout, with shrunk and contracted features, the disease was always dangerous. To determine the current of blood to the extreme vessels, without increasing general excitement, we believe that aqua acetatis ammoniæ, James's powder and the warm bath, are the safest and most effectual remedies. And as these remedies may be used during the intervals of using the purgatives there is no time lost, and a great deal may be done within a short time from the beginning of the fever, a circumstance which we consider

of the greatest importance. The author has been accustomed to direct a warm bath immediately after the bleeding, of a temperature a little higher than that of the human body in its natural state, or generally about 98; but perhaps it would be better to defer the bath till after the operation of the purgative medicines, as it sometimes is found to increase the flow of blood to the head, but if used after the bowels have been well evacuated, and the febrile excitement lowered by a copious bleeding, it will not be so likely to be attended with that inconvenience: and instead of determining the blood into the vessels of the head, it may, by relaxing the extreme vessels, facilitate its passage into the vessels of the surface, and thus relieve the congestions of the internal organs.

There is another circumstance which induces us to think it advisable to defer the warm bath till after the operation of the purgative medicines. In the commencement of the disease, the temperature of the patient is sometimes very high, often as high as 104, and should a bath of a lower temperature be then used it will not communicate to the patient the sensation of heat; whereas a bath, of so high a temperature, instead of relaxing the extreme vessels and relieving internal con-

gestions, will increase the general excitement: but by waiting till vascular action is lowered, and the temperature reduced by bleeding and the operation of purgative medicines, a bath of a temperature considerably lower will communicate to the patient the sensation of warmth without stimulating the general system.

During the administration of purgative medicines, and in the intervals between the doses, a few grains of James's powder and about half an ounce of the acetated water of ammonia should be occasionally given, and their effect assisted by plentiful dilution. The author has usually directed to be combined with the James's powder, the same quantity of submuriate of mercury, more with the view of affecting the bowels than of producing its specific effects on the system. In some cases he conceived that the James's powder occasioned irritability of the stomach; where this occurred early in the disease, effervescing draughts were substituted, as he found that opium, (of which in the more advanced stages of the disease he entertains a very favourable opinion,) if given at the commencement to allay irritability of the stomach, had the effect of increasing the febrile excitement.

The remedies which we have hitherto recommended should be used during the stage

of excitement, and are all calculated to shorten its duration. Another remedy still remains to be considered, which, if used, should be used also in the beginning of the disease. This remedy is the cold bath or cold affusion.

It appears to us that there are two objects with which the cold bath may be generally used. The one is, to diminish increased temperature by the abstraction of caloric; the other, to occasion re-action of the system. To make ourselves more clearly intelligible, what we wish to be understood by re-action is an increase of vascular excitement, occasioned by the stimulus of the blood driven from the surface of the body towards the heart, and increasing the propelling power of that organ. If a person in perfect health plunge into a cold bath, the immediate effect will be to drive the blood from the surface of the body to the centre of the circulating system. The difference of pressure to which the body is subjected when immersed in water has also considerable influence in producing this effect. As soon as the individual leaves the cold medium in which he had been immersed, the blood is propelled into the extreme vessels, in consequence of the re-action of the heart and the diminution of pressure of the surrounding medium. This physical change in

the circulation, after using the cold bath, is made manifest to the eye by a redness and fulness of the vessels of the face and skin; and also to the individual who has used it, by a glowing sensation experienced throughout the body, occasioned by the blood finding access into, and distending the extreme capillary vessels. It is only however in a state of perfect health, and where the vital organs are fully capable of performing their functions, that the re-action of the heart succeeds in re-establishing a free circulation. On the contrary, where the lungs, brain or liver are diseased, instead of that glowing sensation which we have mentioned, the individual experiences a general chill, and a sensation of languor and oppression. In these cases, the re-action of the heart, by impelling the blood through diseased organs, deranges the balance of the circulation, and may disorder all the functions of life. On this account, wherever we know that any of the vital organs is diseased, we must be cautious in the use of the cold bath—particularly of cold affusion, which is the form of the external application of cold that produces the greatest re-action, and consequently gives the greatest shock to the internal and vital organs.

Having said thus much on the general effects of cold externally applied, we come to consider its application in the treatment of this disease. Should the patient be such as we have mentioned—that is, free from visceral disease, with high vascular excitement, and increased temperature of the skin, immersion in a cold bath will be a useful remedy, and by abstracting caloric will considerably lower the temperature of the body. But the cases in which this remedy can with propriety be used are much fewer than is generally supposed. The author has frequently walked round the wards of an hospital, containing perhaps fifty or more cases of fever, on the first or second day after their admission, for the purpose of selecting proper cases with whom the cold bath should be used, and he has seldom found any where the symptoms of the disease, the habit of body, and the general appearance of the patient, were such as to promise much benefit from the use of the cold bath, or even to convince him that it could be used with propriety. An intolerable sensation of weight, anxiety and oppression, about the epigastric centre, a symptom present with most at the beginning of this fever, appeared to him to render questionable the use of the cold bath, but particu-

larly of cold affusion, which, by determining a greater quantity of blood to the vital organs, might increase this oppressive sensation. In many cases also the skin feels damp and cold, although the patient complains of internal heat; in such cases he was apprehensive that the application of cold to the surface might occasion inflammation of the stomach, or some other internal organ. Athough these circumstances often rendered the selection of cases difficult, they have not prevented the author from giving the remedy a fair trial, in cases which, according to his judgment, were the most favourable for its use; but the result of his experience does not enable him to confirm the very high character that has been given of this remedy by several eminent physicians. Where the cold bath however is thought advisable, he would recommend immersion in cold water in preference to cold affusion, as, by the former mode of using the cold bath, the blood is less forcibly driven on the internal organs, whilst the morbid temperature of the body is equally well if not more effectually removed, the heat being communicated from the surface to the cold surrounding medium.

Independently of the objections here stated, there is another circumstance in which the warm bath appears to us to have a decided

advantage over the cold; that is, in admitting without any cause of apprehension or danger the use of the other remedies which we have recommended. Although some are of opinion that the use of mercurials at the same time forms no well grounded objection to the use of the cold bath, we are not of that opinion, and we do not conceive that affusion with cold water is at all times perfectly safe when the bowels contain large doses of strong mercurial purgatives, or when this medicine perhaps is circulating through the general system; whereas the warm bath, under such circumstances, is certainly safe, and will assist the other remedies in relieving the engorgements of the vital organs, by relaxing the extreme vessels.

The treatment which we have here recommended will, in the generality of cases, remove the fever in the course of two or three days; after which, an infusion of Peruvian bark may be given occasionally, to restore action to the debilitated vessels of the stomach. A light and nourishing diet will gradually restore the strength of the patient, care being taken to avoid every thing difficult of digestion, or which by stimulating too much might induce general excitement, and occasion a return of the disease. So favourable a result as the

above however will not always take place, with whatever judgment and ability the disease may have been treated; and it now remains to consider this fever in its more advanced and aggravated stages, or such as has usually been distinguished by the name of yellow fever.

Should the treatment adopted in the beginning not succeed in removing the fever in the course of two or three days, all the symptoms become aggravated, and in a certain degree change their character. The great vascular excitement ceases, and is succeeded by exhaustion and debility. The action of the heart is feeble and languid, and the surface of the body of a pale or yellow hue, the blood not being propelled into the extreme vessels. The eyes dull and heavy, the tongue thickly incrusted, sometimes with a white fur, more generally with a yellow one, and in the aggravated cases, verging to black, particularly about the root and centre. In some cases there is excessive nervous irritability, with anxiety, restlessness, and frequent vomiting. In others, an insensibility to external impressions, with coma. If we observe the eyes of a patient of the latter description, when lying in this torpid state, they will be found distorted; the whites dull and dusky, the cornea collapsed

and glassy, and the whole appearance such as would lead one to expect immediate dissolution; but if the patient is spoken to, and roused from this state of torpor, the eye resumes its natural appearance. In some, the skin over the surface of the body, and also the tunica adnata of the eye, are tinged of a deep yellow colour. These strongly-marked cases have given the name yellow fever to the disease. This symptom occurs in some of the worst cases, but not invariably, nor even generally, as very many prove fatal where no suffusion has taken place; and, on the other hand, we have seen many recover where this symptom had appeared in its most characteristic form. Where this symptom occurs, it is usually accompanied with great languor and exhaustion, and the action of the heart is feeble and irregular. Very often, in this state, the intellect of the patient is as clear and correct as in perfect health, the respiration free, and no pain nor uneasiness experienced. Excessive exhaustion and debility would then appear to constitute the whole disease, and to be the cause of the danger attending this stage of the fever. So sensible do patients appear to be of this cause of danger, that we have known some to request that they might not be allowed to sleep, when the disposition

to sleep was so great that they could not resist it by their own efforts. They felt, they said, an apprehension, that should sleep supervene in the state of exhaustion in which they felt themselves, they should never again awake. In fact, though merely guided by their own sensations, they felt that some stimuli were absolutely necessary, to continue the drooping action of the system; and it is not at all improbable, that were the stimulus of internal remedies, of light, and of external impressions, withdrawn for any considerable length of time, by indulging sleep at this stage of the disease, but that such a result might happen; and that the action of the heart might cease altogether, for want of some stimulus to give motion to the circulating fluids.

Another symptom, but unfortunately a fatal one, sometimes attends the last stages of this fever; this is, a vomiting of a dark-coloured matter, usually likened to the grounds of coffee, or, as it is more emphatically designated, the "black vomit." Having said so much of this symptom, when treating of the pathology of the disease, we shall not here again resume the subject. It sometimes happens quite unexpectedly, and frequently in cases in which the stomach had not been irritable in the early part of the fever. After the febrile excitement

has ceased, and during the state of exhaustion which we before described, a sudden and unexpected gulp of this dark-coloured matter from the stomach, assures the unfortunate patient, as well as his attendants, that his fever will prove fatal! This symptom may occur several times before the termination of the disease. We have seen a patient live more than thirty hours after the first appearance of the black vomit, but we have never seen a case in which this symptom took place that did not ultimately prove fatal.

The stomach is sometimes irritable from the beginning of the disease, and throughout the course of it neither medicine nor nourishment can be retained. The case of Serjeant Haigh, mentioned in one of the reports, is of this description. In that case, the fever terminated fatally in little more than forty-eight hours; and during the whole course of it, the stomach was irritable, and rejected both medicine and nourishment—yet that peculiarity of appearance in the rejected matter, which constitutes the black vomit, did not occur in any stage of the disease. The stomach, when examined after death, was found bedewed with a whitish coloured fluid, which the author conceived to be coagulable lymph or fibrine, effused from the inflamed vessels; which morbid appear-

ance, when taken in connection with the incessant vomiting, can leave no doubt but that inflammation of the stomach had existed in a violent degree, although the black vomit did not occur before death, nor did the subsequent examination of the stomach evince a gangrenous termination.

In some cases, a remission of all the symptoms takes place, the patient appears evidently better, and his recovery is confidently expected, when a sudden and unexpected accession of fever puts an end to these pleasing anticipations, and the aggravated character of the new train of symptoms, which follow this return of the disease, affords but too much reason to apprehend that the fever will ultimately prove fatal.

In one or other of the forms we have mentioned, the fever proceeds from the cessation of the stage of excitement to the termination of the disease. Where it proves fatal, the progress of the symptoms marks their fatal tendency. The pulse gradually becomes weaker, and at length fluttering and unequal; the eyes dull and heavy; the respiration difficult, and at length requiring the exertion of all the muscles, by which the thorax is dilated. When coma attends the last stages of this fever, it prevents the patient from attending

to the gradual diminution of vital energy; but this is not always the case, and sometimes the patient, with a clear and unclouded intellect, anxiously attends to the progress of the disease; and when the sight and hearing begin to fail, makes unavailing exertions to resist this failure of physical power. At this stage of the fever, and often several hours before its termination, that intolerable stench, which we mentioned when treating of its pathology, becomes fully sensible to the surrounding attendants; and shews, should what we there stated be correct, that as the principle of vitality becomes weaker, it loses its influence over organization, and the elementary principles of the body begin to separate by the exertion of other forces. At length, the exhaustion of physical power, or a convulsive effort at respiration, puts an end to the sufferings of the patient.

For the purpose of more clearly conveying his opinion on the pathology and treatment of this fever, the author has divided it into two stages; to these he has given the names of excitement and collapse. Of the reality of this distinction he is perfectly convinced, and also of the necessity of attending to it, for he conceives that the principles of treatment in these two stages of the disease should not only be different but opposite. That in the first or

stage of excitement, the antiphlogistic regimen, in its most extensive and general signification, should be adopted; but that this system should not only be discontinued, but that stimulants should also be given, during the stage of exhaustion or collapse. Or, in other words, that the object of treatment in the beginning of the fever should be to lower the action of the circulating system, but that in the subsequent stage it is necessary to support the circulation by a succession of moderate stimuli. The practical application of these principles to the first stage of this fever we have already fully considered, and we shall now endeavour to apply them to the subsequent stage of the disease.

The first difficulty that presents itself in practice, is to distinguish between these different stages of the fever. The pulse, we have already mentioned, is a very fallible guide. The duration of the disease, if correctly ascertained, will afford considerable assistance; but in this we are liable to be deceived, for the fever may have existed longer than the patient is aware of, or he may wilfully conceal it for a time, as too frequently happens in the army, where the soldier would endeavour to conceal, if possible, from himself, the beginning of a disease, which he knows has proved fatal

to so many of his comrades. The unusual sensations he experiences, when first taken ill, he will attribute rather to any cause than the real one; and as long as he is able to walk about, he will not allow himself to believe, that he has got a disease which, when stript of all fictitious and imaginary colouring, is sufficiently formidable, but around which public rumour has thrown additional terrors, and perhaps the late loss of esteemed companions has thrown an additional gloom. For these reasons it is sometimes difficult for the physician exactly to ascertain the stage of the fever when first consulted, or when the patient first comes under his observation: and this is unfortunate, for the success of his practice will greatly depend on a knowledge of this circumstance, and on the early and prompt application of remedies.

So fully aware was Dr. Jackson of the importance of an early knowledge of the existence of this fever, that he instituted a daily inspection of all the troops in the West Indies, for the purpose of detecting it in the commencement; and that the life of many a soldier has been saved to the service by this daily examination of the troops, the author is clearly of opinion. But although an inspection is essentially useful, and we will often by means

of it detect the commencement of fever, we will also be frequently disappointed, or may form erroneous opinions. The appearances produced by a last night's debauch will sometimes be mistaken for the beginning of fever, and a variety of other circumstances will present obstacles, where a patient is anxious to conceal his indisposition. In fact, it is only by endeavouring to make patients fully sensible of the importance of an early application of remedies, and of the comparatively little danger that attends the disease when recourse is had to medicine in the very beginning, and thus inducing them to co-operate with the physician, that we will be enabled always to detect the fever in its earliest stage.

It is obvious then that the treatment must be modified and regulated by the stage of the disease at which the patient is first seen by the physician; and that the system of depletion cannot safely be carried to the same extent in a patient, seen for the first time on the second or third day of fever, as if he had been seen at the beginning of the disease. The remedies which we recommended during the stage of excitement are all calculated to shorten its duration, so that although in general where these remedies have been promptly applied, this stage will have ceased in about forty-eight

hours, yet should a patient be forty-eight hours ill before any remedies have been used, the same advances will not have been made in the progress of the fever; and consequently, although it may be doubtful whether bleeding should be recommended at this stage of the disease, there can be doubt of the propriety of purgative medicines.

Having stated the difficulties that present themselves, in ascertaining and determining the progress of the fever, we proceed to consider the treatment in its latter stage, or what we have termed the stage of exhaustion or collapse.

The febrile excitement having been removed by bleeding, purging, and the other remedies already recommended, the indication of cure is to support the system through the remaining stage of the disease. For this purpose, the author places great confidence in opium and camphor as medicines; soup, arrow-root, and wine, as nourishing and stimulant diet. Half a grain of opium and three grains of camphor, in a pill or bolus, every third or fourth hour, has a powerful effect in supporting the exhausted system; and a little soup, arrow-root and wine, given frequently, by gently stimulating the stomach, will support the general circulation. That opium and camphor have

the effect of increasing vital power, the author thinks himself authorized to say, from minute and frequent observation: and consequently, that of all the medicines which the materia medica comprises, they are the best in the exhausted state of the system which succeeds to the excitement of fever.

The stomach is an organ of the utmost importance in the animal economy, as on the state of it, in a great measure, depend the movements of the whole machine. When treating of the pathology of this disease, we expressed an opinion that the fatal symptom, the black vomit, occurs oftener from a want of action in the vessels of the stomach, than from the actual occurrence of sphacelus of its coats; and that the matter rejected proceeds in a great measure from the duodenum; the irritability of which continuing after the stomach has lost its tone, overcomes the feeble resistance opposed by the mechanical structure of that organ. The author has seen cases in which there was not the slightest sickness at the stomach throughout the progress of the fever, and where bleeding and the antiphlogistic regimen had been persevered in to the last, and notwithstanding all these means of preventing and avoiding inflammation of the stomach, and notwithstanding the absence of every

symptom that would indicate its existence, these cases terminated with black vomit. Here inflammation of the stomach could not have been the cause of this symptom, as no irritability of that organ had indicated its existence. It must have occurred then from a dissipation of vitality, and consequent want of action of the vessels of the stomach; and the remedies most likely to prevent this effect are such as we have above recommended.

In treating this stage of the fever, the author is of opinion that the principal attention should be directed to the stomach, and that the great object of the physician should be to regulate its action. The principle of vitality should not be reduced too low, by withholding for any great length of time either nourishment or stimulating medicines; nor should the debilitated vessels be over excited by diet of too stimulating a quality, nor by distending the stomach by too great a quantity. A moderate degree of action should be maintained in the stomach, and in regulating the degree of it the judgment of the physician is particularly required. Three grains of camphor and half a grain of opium, every third or fourth hour, according to circumstances, will in general be sufficiently stimulating. Some arrow-root and wine, or a little toasted bread dipped in

Madeira wine, may be given in the intervals of taking the medicine. Some of these medicines or articles of diet should be given frequently: where the exhaustion is great, the stomach should not be allowed to remain beyond an hour without either medicine or nourishment to support the action of its vessels.

The author has frequently directed a small quantity of the submuriate of mercury to be combined with the camphor and opium, not with any view to its specific effects, but to concur in the general principles of treatment by stimulating the ducts and vessels of the alimentary system. Should the bowels be sufficiently free from the action of the purgatives used during the stage of excitement, the submuriate is not necessary, and had better be omitted; for should it occasion frequent evacuations, instead of concurring in the general principles of stimulation, it may increase the general exhaustion.

In one of the reports which we have here introduced, a case is mentioned, where three bottles of brandy were given to a patient, in about twenty hours, and the same proportion continued for several days. This was certainly carrying the stimulating plan to an extent which the author would not even venture to

approach. The practice was however successful. The author did not see the patient during the treatment, but he was given to understand that the state of exhaustion was so great, that dissolution was momentarily apprehended; and that after swallowing about a table spoonful of brandy, he always experienced a renovation of vital power, which again declined as the effects of the brandy gradually ceased, and was only renewed and supported by repeated doses of this powerful stimulant.

As particular and insulated facts have more weight than general assertions, in explaining general principles, we shall here mention a circumstance which will place in a strong point of view the utility of stimulants in the last stages of this fever.

An officer belonging to a regiment stationed at Guadeloupe, in 1813, was attacked with fever, the symptoms of which were unusually severe, and in the last stage of the disease appeared to threaten a fatal termination. The surgeon of the regiment had already lost all hopes of his recovery, and was paying him what he considered would be his last visit, in company with some other officers of the corps. After leaving the patient's room, the surgeon expressed to the officers his opinion, that "it

was all over with him," that he could not hold out much longer; and at the same time gave some directions to the officer's servant about making the necessary preparations for the interment of his master. The patient, who was lying in the next room in a state of great exhaustion, and whose respiration and circulation.were scarcely perceptible from absolute debility, overheard this conversation; and when the officers had taken their departure, he enquired of his servant "what it was that the doctor had said." The servant endeavoured to evade the question, but he told him that he had heard it himself, and that the doctor had given him directions about his interment, as there was no chance of his recovery; and as he must die, he said, he thought he might as well have something to drink as long as he remained; and desired him to bring a bottle of Madeira wine from the mess room, and a bottle of brandy from the canteen of the regiment. It was now evening, and in the course of the night he drank the whole of the wine and brandy, and to the surprize of the surgeon was not only alive in the morning, but absolutely so much better, that there now appeared some hopes of his recovery. This gentleman ultimately recovered, and we have reason to believe is now in perfect health, as his regiment

has some years since returned from the West Indies to England, and his name still occupies its place in the army list.*

We are far from recommending such powerful stimulation in any stage of the disease, as was resorted to in the two cases above mentioned. But the success which attended the use of stimulants in these cases may serve to shew, that when properly managed and regulated, they afford a powerful means of supporting the principle of vitality, and of conducting the patient through the last stages of this formidable disease. The degree of stimulation that may become necessary will in a great measure depend on the treatment of the first stage, or what we have called the stage of excitement. Should stimulants be used in the beginning of the fever, as sometimes happens where the practitioner adheres to the doctrines of the Brownonian system, the collapse or exhaustion of the last stage will be greatly increased by the increased excitement of the stimulating treatment. Such the author knows was the plan of treatment adopted in the beginning of the case alluded to in the report, and where so large a quantity of brandy was

* Since writing the above, the author has had the pleasure of seeing the officer in Cheltenham, in perfect health.

afterwards given, and perhaps rendered necessary by the subsequent exhaustion. But if the treatment of the first stage should be such as we have already recommended, by shortening the duration of febrile excitement, it will moderate the degree of subsequent exhaustion, and render less stimulation necessary. In conducting the treatment, these general principles must be kept in view, and we should endeavour to steer clear of both extremes—that is, stimulants should not be given too early in the disease, nor should they be altogether omitted, nor delayed till the stomach has lost its tone. By falling into the first extreme, we aggravate the stage of exhaustion by increasing the degree of febrile excitement; by the other, we come too late to support the powers of the system; as the application of stimulants to exhausted vessels will only occasion a greater dissipation of vital power.

In the island of Trinidad there is a medical practitioner who has acquired there a considerable degree of local celebrity, by his success in some desperate cases of yellow fever, which to the other medical gentlemen had appeared entirely hopeless. In that island, as well as elsewhere, it too frequently happens that medical men, in order to acquire a character for discernment and penetration, are

very forward to pronounce an unfavorable prognosis. They fear that should a disease terminate fatally without their having predicted the fatal event, their character may suffer in the estimation of the public. To prevent this, whenever unfavorable symptoms appear, they predict an unfavorable termination; and having thus set themselves easy with regard to the prognosis, it is to be feared that they sometimes relax in their efforts to combat the disease. Whenever cases of this description occurred, and when the attending physicians had pronounced a case hopeless, and had in consequence withdrawn or ceased their attendance, this gentleman offered himself, and always held out at least some small hope of recovery to the patient and his friends. Such conduct, we are of opinion, is both humane and political, for we conceive that nothing can be more directly contrary to the principles of humanity, than for a physician to abandon his patient, or tell him that he has no chance of recovery; particularly in a disease where the fatal event may really be accelerated by the influence of fear on the mind. It was certainly political, for his character could not be injured should a patient die who had already been denounced by the faculty; and should he chance to recover, that recovery would and perhaps should be

ascribed to his skill and exertion. In these desperate cases he frequently succeeded in carrying the patient through the disease, if not to the disappointment, at least contrary to the expectations of the other practitioners.

The means which this gentleman adopted of curing cases, which to others had appeared entirely hopeless, must be an object of curiosity. It was this: as soon as the unfortunate patient was abandoned by the doctors, he presented himself with a good horse and gig, and taking the patient into his vehicle, well folded up in clothes and supported by assistants, he drove him at a good round trot, with his face exposed to the air, over a considerable part of the island, occasionally resting and again resuming his excursion, according to the effect it produced on his patient. The author has not seen exemplified in any individual the effect produced by this treatment, but he has been told of cases in which the patients recovered, where recovery had appeared to be almost physically impossible.

Although it is not mentioned as a part of this gentleman's plan of treatment, we think it likely, that in addition to the exercise and fresh air, he also gave the patient some wine occasionally, in order to support his strength and to enable him to bear the fatigue and

exertion. This treatment then will be found to rest on the same principles as what we have already recommended, in the stage of exhaustion, and to be merely another mode of stimulating the system and supporting vital power. We have already explained how vessels lose their action, and how the circulation gradually ceases, unless stimulants be frequently applied to propel the circulating fluids. Here the exercise, fresh air, and motion of the carriage, all concur in keeping up the action of the system, and the effect of wine on the stomach will under such circumstances be more effectual, where the vitality of its vessels have been already somewhat roused by the stimulus of air and exercise.

Before leaving this part of our subject, we must say a few words on the effects of blisters in the different stages of this fever. We have seen some practitioners so fond of this remedy, that to shave and blister the whole of the head was the first step of treatment when a patient was admitted with fever. The number of fever cases in their hospitals might be recognised at a glance, by the number of blisters applied to the scalp. To say nothing of the severity of this treatment, we think it is besides a remedy of doubtful utility. We have already mentioned the influence of the mind in determining

the result of this fever, and there is certainly nothing more calculated to alarm a patient than to be so roughly handled by his medical attendant; particularly at the beginning of a disease, where the object should be, if possible, to inspire confidence and hope. Where the physician begins by blistering the head, the patient very naturally concludes that his case is a bad one, and that his medical attendant almost despairs of his recovery: and thus at the very commencement he is subjected to the chilling influence of fear, and the apprehension of death, which continues to haunt him during the whole course of the disease, and it is to be feared materially lessens his chance of recovery.

Besides the moral influence we have ascribed to the early application of blisters, we think they may be, and sometimes are injurious, by increasing the febrile excitement. When the fever is high, the application of a blister to any part must increase that fever; as it superadds a local irritation, in which the whole system sympathizes; and even should it produce a beneficial effect, in any particular organ near which it may have been applied, we conceive that it more than counterbalances such effect by increasing the febrile excitement and the general irritability of the system.

If blisters are ever advisable in this disease, it is certainly in the last stage, or what we have denominated the stage of exhaustion, where they may concur with the general principles of stimulation. They may be used in conjunction with, but can never be relied on to the exclusion of the remedies already recommended.

We shall here finish what we have to say on the subject of fever, by introducing a few of the cases treated by the author in his own regimental hospital. These cases we shall insert in the same words in which they were originally recorded in the journals of the hospital; and accompanied by the same pathological and practical observations which at the time they had suggested to the author.

"Corporal Howard, of the Royal York Rangers, was admitted into hospital at Saint Joseph's, Trinidad, on the evening of the 23d of September 1815. He had been seized in the morning of that day with rigors, succeeded by flushing heats; when admitted, he complained of head-ache—pains in the extremities—continued thirst—pulse 100—

skin hot and dry—tongue coated. After admission he had the following medicines.

℞ Submuriat. Hyd. ℈i.
Extract. Colocynth. comp. ℈i.
M. fiant pilulæ viij.
Statim sumendæ et post horas tres capiat. Sulphat. Sodæ ℥iss. et rep. Medicamenta si opus sit ad alvi plenum effectum.

"Sept. 24th.—The above medicines produced the desired effect. Pulse 120, full and strong—skin hot and dry—eyes inflamed—tongue coated—excessive thirst—severe pain in the head.

Detrahatur Sanguis ad ℥Lx.

℞ Submuriat. Hyd. et
Pulv. Jacob. ver. āā. gr. iij.
M. fiat Pilula 3tia. quoque hora capienda.

℞ Aquæ Acetatis Ammoniæ uncias duas.
Aquæ Communis uncias octo
Vini Tartratis Antimonii drachmas duas.
M. fiat Mistura cujus capiat Cochlearia duo, post singulas Pilulas.

"The above medicines were continued during the day: in the evening the stomach became irritable and rejected the medicine, the head-ache became intolerable, and bordering on delirium. The action of the

sanguiferous system having been sufficiently lowered by the bleeding in the morning, it was not thought advisable to repeat it. The stomach being extremely irritable, the James's powder was omitted, the calomel given alone, and the irritability of the stomach alleviated by giving during the night effervescing draughts, combined with a small quantity of laudanum. Care was taken to keep the bowels open during the night with enemas, and blisters were applied to the head and stomach. Tea, rice-water and toasted water, were given in large quantities, and he was induced to use plenty of dilution by frequently giving and encouraging him to take these drinks.

"On the 25th, pulse small and frequent—stomach less irritable—skin cool—bowels open—eyes tinged of a yellow colour—a general suffusion has taken place into the cellular membrane over the whole surface of the body, tinging the skin of a deep yellow colour. In other respects, appears rather better, and has slept a little during the night. The same medicines were continued during this day, and the bowels kept open by occasional enemas.

"26th.—Slept but little during the night—pulse small and frequent—eyes much tinged—head-ache considerably relieved—stomach still

irritable—considerable agitation of the nervous system. The same medicines were continued, with plenty of diluting drinks varied to the taste of the patient. A little more laudanum was added to the draught, on account of the nervous irritability, and opiate enemas were occasionally given.

" 27th.—Slept pretty well during the night—pulse frequent—skin hot—stomach less irritable—bowels open—eyes suffused and glassy—less irritable than yesterday—has taken some arrow-root, which remains on his stomach—feels extremely low—mouth affected by the calomel. The pills were discontinued, and the mixture before mentioned given, with the addition of some nitrous æther. The blisters having produced a spasm of the neck of the bladder, fomentations were applied to the part.

" Vespere.—Continues as in the morning—skin dry and hot.

℞ Vini Tartratis Antimonii ℈ij.
Tincturæ Opii guttas xxxx.
Aquæ Acetatis Ammoniæ ℥i.
Syrupi. q. s.
M. fiat Haustus hora octava vespertina capiendus.

" 28th.—Pulse natural—skin moist—tongue clean—slept well during the night, and has had a perfect remission of fever, but feels

extremely debilitated. Infusion of bark was now given him, and one gill of wine allowed him every day. He had no return of fever. The infusion of bark was continued, the bowels kept open by occasional purgatives, and in about five weeks from the first attack he was discharged from hospital perfectly well.

"The above case of fever was one among a number of serious cases, which occurred in the regiment immediately after its arrival in Trinidad from Guadaloupe, after the expedition against that island. The regiment had been much exposed to the effects of the climate during very bad weather, which occurred after the capture of the island, and had suffered considerable fatigue before, during, and subsequent to that expedition, before its arrival in Trinidad."

"George Hunt, of the Royal York Rangers, twenty-three years of age, was admitted into hospital at Saint Joseph's, Trinidad, on the 18th of September 1815. He had been unwell some days: when admitted, he complained of a dull sensation of pain in the head, particularly across the face—pulse quick—face flushed—eyes prominent, with great turgescence of

the vessels of the adnata—thirst—foul tongue—bowels costive. He had the following medicines.

℞ Submuriatis Hydrargyri
Extracti Colocynthidis Compositi āā. ℈j. M. fiant Pilulæ statim sumendæ, et post horas tres Sulphat. Magnesiæ ℥iss.

"The bowels being freely evacuated by the above medicines, the following was prescribed.

℞ Submuriatis Hydrargyri
Pulveris Jacobi veri āā. gr. iij. M. fiat Pilula 3tiis. horis capienda.

"The last medicines were continued during the night, and their effect assisted by plenty of diluents.

"19th.—Pulse quick, hard and strong—bowels well evacuated—face flushed—unnatural prominence of the eye—the vessels of the eye greatly enlarged, and its coats unusually distended—a dull sensation of pain in the forehead.

Detrahatur Sanguis ad ℥xl. Capiti raso et cum aceto lavato, applicetur Emplastrum Cantharidis vesicatorii.

℞ Aquæ Acetatis Ammoniæ ℥j.
Vini Tartratis Antimonii guttas xl.
Syrupi q. s. ad gratum faciendum M. fiat Haustus, post singulas Pilulas capiendus.

Cont. Pilulæ Hydrargyri Submuriatis et Pulv. Jacobi.

"The above medicines were continued during the night, and assisted by plenty of diluting drinks: the bowels were kept open by occasional enemas.

"20th.—Slept pretty well during the night—bowels sufficiently open—pulse and heat nearly natural—appears free from fever.

Capiat Infusi Cinchonæ ℥ij. 2da. quaque hora.

"He continued free from fever during the whole of this day, but felt low and exhausted. Tea, arrow-root, and a gill of wine were allowed him.

"21st.—Appears still free from fever, but complains of a dull heavy sensation in the head, and has had no stool during the night.

℞ Submuriatis Hydrargyri.
Extract. Colocynth. Comp. āā. gr. x. fiant Pilulæ statim sumendæ.

"The last medicine not having produced any effect on the bowels, ℥iss. olei ricini was given, which produced a free evacuation of them.

"22d.—Appears considerably worse this morning; pulse small and frequent—head confused—complains of great lassitude and faintness on the slightest motion—bowels free—eyes tinged with a yellow suffusion—tongue

red about the edges, having a black line along the centre.

Repr. Pilulæ ex Submuriate Hydrargyri et Pulvere Jacobi.

Repr. Haustus Diaphoreticus et addetur cuique Tincturæ Opii gutt. x.

"The above medicines were continued during the day, in the evening he became comatose. The bowels were very open and the stools black and fœtid.

Appr. Emplastra Cantharidis Vesicatorii inter Scapulas et Tibiis internis.

℞ Camphoræ gr. iij.
Opii. gr. ss. fiat Pilula 3tia quaque hora capienda.

"23d.—Passed the night tolerably well, but occasionally falling into a lethargic stupor, from which when awakened by the attendants he spoke coherently. The blisters produced the usual effects. Three gills of wine were directed to be given him in the course of the day at different times, particularly when he became unusually low. His present symptoms are: pulse small, wiry and unequal—eyes heavy, glassy and prominent—breathing difficult—countenance expressive of great anxiety—bowels open frequently—stools fœtid—tongue and teeth dry, with black sordes collecting frequently about the gums—a general

yellowness has now extended itself over the surface of the body—he frequently falls into a kind of slumbering stupidity.

℞ Submuriatis Hyd. gr. vj.
Camphoræ gr. x.
Extracti Opii. gr. j. M. fiat Bolus, 3tia quaque hora capienda.
Enema ex Amylo cum Opio ter in die.

"The above medicines were continued during the day, but without much benefit. His pulse sinking in the evening, and in other respects appearing very low, an egg was given him and a bottle of brisk porter, which he took and retained on his stomach, after which he appeared a little better. To relieve the difficulty of breathing, a blister was applied to the chest. The other remedies were continued.

"24th.—Pulse small, frequent and unequal —continues comatose—eyes fixed and glassy —skin cold and clammy—respiration laborious —bowels open—countenance expressive of great anxiety.

Continuentur Boli ex Camphora cum Opio.
Applicentur Emplastra Cantharidis Vesicatorii Femoribus internis.

"These medicines were continued during the day. The pulse became intermitting and scarcely perceptible; in the evening,

the extremities cold—countenance livid and anxious. He generally remained in a state of stupor, unless spoken to, when he answered coherently. More porter was given to him, which he took and retained on his stomach. Madeira wine ad libitum.

℞ Ætheris Sulphuric. gtt. xxx.
Tincturæ Opii gtt. xv. M. fiat Haustus post singulos Bolos capiendus.

"Vespere.—No change has taken place for the better; the pulse continues to sink, notwithstanding the use of stimuli.

Continr. Medicamenta et Vinum ad libitum.

"25th.—The medicines were continued during the night, and he took about four gills of wine, and also some porter—pulse scarcely perceptible—extremities cold—eyes fixed, glassy and prominent—continues comatose.

Continr. Medicamenta.

"Died about eight o'clock, having a few minutes before answered coherently when spoken to.

"APPEARANCES ON DISSECTION.

"The vessels of the dura mater considerably enlarged, and more numerous than ordinary.

An effusion of a serous fluid on the surface of the pia mater, which flowed out in considerable quantity when the dura mater was removed. The ventricles of the brain contained a preternatural quantity of fluid, and an increased vascularity was evident in the whole substance of the brain. The left lung adhered to the pleura. The pericardium filled with a serous effusion of a deep green colour. All the cavities bedewed by the arterial exhalents were found to contain a preternatural quantity of fluid; and the vessels of the thoracic and abdominal viscera bore evident marks of increased action and of great excitement.

"The man whose case is above detailed was of a strong plethoric habit of body; he had undergone a great deal of fatigue during the expedition against Guadaloupe. Having been my own servant for two years, I knew his habits. He was intemperate both in eating and drinking; and frequently, during the expedition, had been exposed alternately to wet and cold and the scorching heat of a tropical sun, while under the influence of these excesses; and particularly on the passage from Guadaloupe to Trinidad, during which he was in an almost continued state of intoxication. Is it not probable, that from the combined effects of the sun's heat and continued intem-

perance, such an increased action might have been produced in the vessels of the head, as to terminate in effusion on the surface of the brain? The appearances would seem to lead to this conclusion; and is it not probable, that this effused fluid or condensed exhalation, together with the distension of the vessels of the brain and membranes, produced such compression on the origin of the nerves, as occasioned the train of symptoms remarked in the case? If such be the real pathology of the case, and from the symptoms during the disease, and the appearances on dissection, we can infer nothing else, the remedies indicated by this pathological view of it must be such as are capable of subduing inflammation in the strictest sense; and at the same time of promoting the absorption of any effusion which might have already taken place. On these principles the treatment was founded—powerful depletion in the beginning, by bleeding and purging; the stimulus of calomel to the bowels throughout; blisters, sudorifics, &c. In all the severe cases of fever which occurred at the same time, this treatment removed the fever in a few days, and no relapse occurred. In this case, it failed of success."

"James Legge, of the Royal York Rangers, about twenty-five years of age, was admitted into hospital on the 10th of December 1815. He had been ill some days: when admitted, he complained of head-ache—pains in the limbs and loins—pulse 100—heat 98—tongue foul—eyes inflamed—face flushed.

℞ Extract. Colocynth. Comp.
Submuriat. Hyd. āā gr. xij. fiant Pilulæ statim sumendæ et post horas tres ℥iss. Sulphatis Sodæ. Balneum tepidum.

"Vespere.—The medicines have operated well.

℞ Hydrargyri Submuriatis gr. x.
Pulv. Jacobi gr. vj. M. Capiat hora Somni.

"11th.—Pulse 120, full and strong—bowels open—head-ache severe—tongue dry and coated.

Detrahatur Sanguis ad ℥xl.

℞ Submuriatis Hydrargyri
Pulv. Jacobi āā gr. iij. M. fiat Pilula 4ter in dies cap.
Balneum tepidum.

"12th.—Head-ache a little relieved—pulse 110—heat 90—stomach sick and cannot retain the medicine—eyes suffused and languid—bowels not sufficiently open.

℞ Submuriatis Hydrargyri ℈j. fiat Pilula statim sumenda

Enema purgans bis in die.

Applr. pectori Emplastrum Cantharidis Vesicatorii.

"Vespere.—Head-ache a little relieved—pulse 110—heat 90—bowels obstinately costive—stomach still irritable—tongue yellow and coated.

℞ Submuriatis Hydrarg. gr. xv. fiat Pilula statim sumenda, et post horas duas Sulphatis Sodæ ℥iss.

Haustus effervescens post Medicamenta purgantia.

"13th.—Bowels freely opened—head-ache still severe—eyes languid—pulse soft and full—skin warm and moist.

Applr. Scrobiculo Cordis, Emplastrum Cantharidis Vesicatorii.

℞ Hydrargyri Submuriatis gr. v.
Pulv. Jacobi. gr. iij. M. fiat Pilula 4ter in dies capienda. Balneum tepidum.

"Vespere.—Stomach sick—eyes suffused, glassy and languid—head-ache severe.

Capiti Raso et cum Aceto lavato,
Applr. Emplastrum Cantharidis Vesicatorii.

℞ Submuriatis Hydrargyri gr. x.
Extracti Opii gr. iss. M. fiat Pilula hora somni capienda.

" 14th.—Pulse soft—skin cool and moist—eyes suffused—countenance shrunk—bowels again costive.

℥ij. Olei Ricini statim.
Enema purgans bis in die.
Contr. Pilulæ et Haustus ut heri.

" 16th.—Pulse and heat about the natural standard—skin cool and moist—no fever at present, but feels extremely low and exhausted.

℞ Camphoræ, gr. iv.
Opii gr. iss. M. fiat Bolus 4ter in die Capiendus.
Infusi Cinchonæ ℥ij. 3tiis horis.

" Vespere.—Continues free from fever, but rejects the boluses and bark—bowels open.

Capiat Haustum Effervescentem in statu effervescentiæ omni hora cum guttis decem Tincturæ Opii in singulis haustibus.

" 17th.—Stomach still sick—pulse and heat natural—continues free from fever—mouth affected with the mercury—feels extremely low and exhausted.

Cont. Haustus
Habeat hora somni Tincturæ Opii guttas L.

" 18th.—Continues free from fever—mouth sore—bowels costive.

℥j. Olei Ricini
Contr, cætera Medicamenta.

"19th.—Bowels open—continues free from fever—Stomach retentive.

℥ij. Infus. Cinchonæ 2dis horis
Gargarisma Astringens.

"20th.—Continues to mend.

Contr. Med.

"This patient gradually gained strength, and recovered perfectly. He was discharged from hospital on the 6th of February."

"A number of severe cases of fever occurred at the same time with the above, and all recovered under treatment founded on the same principles, and only differing from the above where difference or peculiarity of symptoms might seem to require some difference or modification of treatment."

"Samuel Callaghan, of the Royal York Rangers, twenty-six years of age, was admitted to hospital on the 7th of January 1816, in a state of insensibility, in which he remained about three hours. He had not previously complained of any sickness, and his attack was like an epileptic fit, although on enquiry

it appeared he had never been subject to that disease. Pulse quick—skin hot—face flushed—breathing laborious. Four pounds of blood were taken from his arm, and an emetic of sulphate of zinc forced down his throat; after which he recovered his sensibility and speech.

Capiat statim Submuriatis Hydrargyri ℈j. et post horas duas Sulphatis Sodæ unciam cum semissæ.
Balneum tepidum.

"Vespere.—Has been well purged—pulse quick—skin hot and dry—complains of severe head-ache.

℞ Submuriatis Hydrargyri gr. xij.
Pulv. Jacobi gr. vj. M. fiat Pilula hora somni Capienda.

"8th.—Pulse frequent—skin hot and dry—intolerable head-ache—tongue foul—bowels open.

℞ Submuriatis Hydrargyri
Pulv. Jacobi āā gr. iij. M. fiat Pilula 4ter in dies capienda.
Capiti raso et cum aceto lavato
Applicetur Emplastrum Cantharidis Vesicatorii.
℥ss. Aquæ Acetatis Ammoniæ post singulas Pilulas.
Balneum tepidum

"9th.—Pulse quick—skin hot—tongue furred—bowels open—face flushed—severe head-ache.

℞ Submuriatis Hydrargyri gr. xv. capiat statim et post horas ij. Sulphat. Sodæ ℥iss.
Balneum tepidum.

"Vespere.—Has been well purged—pulse quick—skin hot and dry—complains of severe head-ache.

℞ Submuriatis Hydrargyri gr. xij.
Pulv. Jacobi gr. vj. M. fiat Pilula hora somni capienda

"10th.—Pulse frequent—skin hot and dry—intolerable head-ache—tougue furred—bowels open.

℞ Submuriatis Hydrarg.
Pulv. Jacobi āā gr. iij. M. fiat Pilula 4ter in dies capienda.
Capiti raso et cum aceto lavato,
Appr. Empl. Cantharidis Vescicatorii.
℥j. Aquæ Acetatis Ammoniæ post singulas Pilulas capienda.
Balneum tepidum.

"Vespere.—Appears better—has been well purged—head-ache a little relieved.

℞ Submuriatis Hydrargyri gr. x.
Pulv. Jacobi gr. vj. M. capiat hora somni.

"11th.—Pulse quick—skin hot—tongue furred—bowels open—head-ache severe—face flushed.

Contin. Pulveres ex Submuriate Hydr. cum Pulv. Jacobi.
Balneum tepidum.

" Vespere.—Appears rather better.

Contin. Pulveres.

℞ Vini Tartratis Antimonii ℈i.
Aquæ Acetatis Ammoniæ ℥i.
Tincturæ Opii guttas xxxx.
Aquæ ℥i.
Syrup. q. s. M. fiat Haustus h. s. capiendus.

" 12th.—Pulse and heat about the natural standard—bowels open—head-ache removed —stomach irritable.

Haustus Effervescens cum Tincturæ Opii guttis x. 4ter in die capiendus.

" 13th.—No fever at present—pulse and heat natural—bowels open.

℥ij. Infusi Cinchonæ 4ter in dies.

" 14th.—Continues free from fever—mouth sore from the effects of the mercury.

Contin. Infusum Cinchonæ.
Haustus Anodyn. h. s. cap.
Habeat Gargarisma.

" 23d.—He remained free from fever since the 14th, took the infusion of bark, and considerably recovered his strength, until last evening, when he had a return of fever.

℞ Submuriatis Hydrargyri gr. xv. capiat. statim et post horas duas ℥j. Sulphat. Magnesiæ.

" Vespere.—Bowels well opened.

Capiat h. s. Pulv. Jacobi gr. vj.

"24th.—Pulse and heat natural—no fever at present.

Contin. Infusum Cinchonæ.

"30th.—This patient continued free from fever since the 24th, during which time he continued the use of the bark. Last night he had another attack of fever, of the intermittent form. Pulse 100—heat 98—skin dry—bowels costive.

℞ Submuriatis Hyd. gr. xvj. fiat Pilula statim capienda et post horas ij. ℥i. Sulphatis Magnesiæ.

"31st.—Pulse and heat natural—bowels open—no fever at present.

℞ Contr. Infusum Cinchonæ
Capiat Liquor. Arsenicalis gtt. x. 4ter in die.

"Feb. 1st.—Continues free from fever.

Contin. Guttæ et Infusum Cinchonæ.

"He continued the use of the bark and drops till the 8th of February, when, being perfectly recovered, he was discharged from hospital."

"Edward Turtle, of the Royal York Rangers, forty-two years of age, was admitted

to hospital on the 17th of December 1815. He complained of slight pain in the head—habit of body gross—pulse quick, full and strong—pains in the back and extremities—face flushed—bowels costive.

Detrahatur Sanguis ad ʒxl. Capiat Pilulas sex purgantes et post horas tres Sulphatis Sodæ ʒiss. et repetantur Medicamenta si opus erit ad plenum effectum

"Dec. 18th.—Bowels freely opened by the medicines taken yesterday—head-ache relieved—pulse hard and frequent—face flushed—skin hot and dry—tongue coated.

℞ Pulv. Jacobi
Submuriatis Hyd. āā gr. iij. M. fiat Pilula 4ter in dies capienda.

"Vespere.—Symptoms as in the morning.

℞ Pulv. Jacobi gr. v.
Submuriatis Hyd. gr. x. M. fiat Pilula capiat h. s.

"19th.—Pulse small and frequent—skin hot and dry—tongue coated—bowels open—head-ache severe.

Contr. Medicamenta
Balneum tepidum

"20th.—Pulse and heat about the natural standard—bowels costive and slightly painful.

℞ Submuriatis Hydrargyri gr. xv. fiat Pilula statim capienda, et post horas tres capiat Sulphatis Sodæ ʒiss.

"21st.—Pulse and heat natural—bowels open—has had a remission of fever.

Infusi Cinchonæ ℥ij. 4ter in die.

"22d.—Continues free from fever.

Continr. Infusum Cinchonæ.

"23d.—Continues free from fever.

Continr. Infusum Cinchonæ.

"24th.—Was attacked during the night with most excruciating pain in the bowels, to such a degree as to induce delirium—eyes prominent and staring—countenance expressive of great anxiety—pulse small, frequent and tremulous—bowels obstinately costive, although purging medicines have been given him.

℞ Submuriatis Hyd. ℈j. fiat Pilula statim capienda, et post horam capiat Olei Ricini ℥ij. Enema purgans.

Balneum tepidum.

"Hora duodecima.—Stools have been procured, but the pain still continues unabated—countenance pale and expressive of great anxiety—eyes prominent and languid—pulse small and unequal—stomach irritable and rejects the medicine.

Capiat Olei Ricini ℥iss.

Balneum tepidum et post Balneum Scrobiculo Cordis et Abdomini Appr. Emplastrum Cantharidis Vesicatorii.

Enema Opiatum secundis horis injicietur.

"Vespere.—Pain continues with intolerable anguish—eyes prominent and languid—pulse small and intermitting—skin cold and clammy—extremities cold—countenance livid and anxious—teeth and gums covered with a black incrustration—bowels freely opened.

℞ Submuriatis Hydrargyri gr. iij.
Extracti Opii gr. j. M. fiat Pilula omni hora capienda.

"The remedies were continued, but he died during the night.

"DISSECTION.

"On opening the abdomen, the omentum was found firmly adhering to the parietes of the abdomen above, and to the intestines underneath: it required considerable force to detach it from its connexions. When separated, a quantity of pus, equal at least to a pint, flowed out from beneath its folds, and covered the whole surface of the intestines. The omentum and mesentery were thickened and covered with fat. The liver, spleen, and in fact all the abdominal viscera, were a mass of disease.

"This last case appeared a very extraordinary one, as no symptoms, either before or during the attack of fever, indicated in the least the existence of so much disease. His

fever was a slight one and was removed in the course of a few days, and he appeared in a state of convalescence, when this unaccountable attack commenced, and carried him off in twenty-four hours from its accession. That so much disease could exist among the abdominal viscera, without evincing itself by any peculiar symptoms, is extraordinary; or that life should have continued where such a state of the abdominal viscera existed, is almost inconceivable! This mass of disease could not have had its rise and progress during so short and apparently so slight a fever, and consequently must have existed before the attack of fever. I made every enquiry respecting the previous life and habits of this patient, and found that he had been a painter by trade, and of intemperate habits; and that he had been employed in painting at Barbadoes some time before this attack of fever. It is likely that the deleterious qualities of paint were the cause of these ravages among the intestines."

In the cases here introduced, and which, together with the reflections and observations that accompany them, are transcribed in the words of the original reports, it will be seen

that calomel was then given by the author in greater quantity than he recommends in the present publication. He had not then been long in the West Indies, and consequently was prejudiced in favor of a medicine so much celebrated by other practitioners; but from a full review of his subsequent experience, he is now of opinion that this powerful medicine will be safer and more efficacious, if given in more moderate doses. In selecting these cases it will be obvious that there was no wish to make a display of successful practice, as two out of the five cases had proved fatal. Had such been the object, several hundreds might have been mentioned, where the treatment here recommended was completely successful; but as the object of the author was to shew the disease in its most aggravated form and character, those cases were selected in which the symptoms were strongly marked, and which were otherwise calculated to convey the clearest ideas, and the most striking illustrations, of the nature and character of this fatal and formidable fever.

PART THE THIRD.

OF DYSENTERY, CHOLERA MORBUS AND HEPATITIS, OR INFLAMMATION OF THE LIVER.

WE have now considered at some length that scourge of Europeans, the fever of tropical climates; and having, during a residence of some years within the tropics, paid considerable attention to that disease, and taken every opportunity of investigating its nature and character, we trust we have added something in elucidation of its pathology and treatment. The other acute diseases to which Europeans are subject in those climates, are occasioned by the same general causes which give rise to fever: that is, are occasioned by the external excitement of heat, and the internal excitement of stimulation; combined with atmospheric influences, and the agency of moral causes. Where these general causes

are applied to any individual whose organs and viscera are sound, and unimpaired by former diseases, the consequence most probably will be fever. But if from a long-continued residence within the tropics, or from the effects of former diseases, the liver, the stomach, the intestines, or in fact any of the internal organs, are diseased or debilitated, the application of the same causes will most likely give rise to an affection of that particular organ.

In this way are occasioned dysentery, hepatitis, and cholera morbus—diseases which, next to fever, are the most destructive to Europeans in those climates, and the occurrence of which may be easily understood from the pathological principles already stated in the explanation of fever. The circulation being accelerated by the causes already mentioned, the current of blood may be directed to the viscera of the abdomen by the impression of a cold or damp atmosphere; and engorgements of it will take place in these viscera, should they happen to be debilitated by former diseases, or by the effects of internal stimulalation. The lining membrane of the intestines, which is of a texture particularly soft and delicate, becomes distended with blood, and is rendered in consequence peculiarly suscep-

tible of irritation from every stimulating cause, such as spirituous or fermented drinks, and acrid or ascescent diet. The irritation produced by these substances along the internal surface of the alimentary canal, occasions in some parts a rupture of the distended blood vessels, and in others spasmodic contractions, and inflammatory distention and excitement, which again give rise to bloody stools, pain tormina and tenesmus, and all the other symptoms which characterize dysenteric inflammation.

The long-continued application of these causes of excitation to the liver, produces the most important changes in its organization and functions. The great heat of a tropical climate, the stimulating quality of the diet and drinks which Europeans usually indulge in, in those climates, together with large quantities of acid fruits and acescent vegetables, stimulate to an excessive degree the vessels of the biliary system and of the chylopoietic viscera. In consequence of this excessive stimulation, the blood is accumulated in all the viscera connected with the biliary system, and as the quantity of bile secreted by the liver within certain limitations will depend on the rapidity with which the blood is circulated through that viscus, should the excitement stop short of

inflammation, the secretion of this fluid may become so copious, that, overflowing the biliary ducts, it may fill the duodenum, and thence be diffused through the whole of the intestinal canal.

The same causes that had excited the liver, and occasioned this overflowing secretion of bile, it may be easily conceived, must have also occasioned an increased vascularity of the alimentary system; so that this quantity of stimulating bile, thrown into the intestines, comes in contact with the lining membrane, rendered excessively irritable by vascular distention. In consequence of which the natural peristaltic motion of the intestines is greatly increased or perhaps inverted, or both these effects may be produced, so that a continued vomiting or purging, or both alternately or conjointly, may take place, producing the disease called cholera morbus—a disease frequent and formidable to Europeans in tropical climates.

In other instances the vascular excitement arising from these causes, instead of simply occasioning an overflow of bile, induces inflammation in the substance of the liver. This effect, which may happen in any part of the system where the vessels are greatly excited, frequently takes place in the liver, particularly

in tropical regions, from the external stimulus of heat and the effect of internal stimulation. Inflammation in the liver, like inflammation in other parts, may have different terminations, and may produce very different effects; and these different terminations and effects, and their various and complicated modifications, constitute the greatest share of all the complaints that harass Europeans in warm climates; and too frequently also accompany them on their return to Europe, and render them perhaps valetudinarians for the remainder of their lives. The most simple and also the most favourable termination that can follow inflammation of the liver, is resolution; that is, a cessation of the inflammatory action, the vessels returning to their natural state, and the organization of the liver continuing unimpaired. The only injurious effect which follows this termination of inflammation is a debility of the vessels that had been the seat of the inflammatory action, by which they are rendered more susceptible of inflammation afterwards, whenever they are exposed to the influence of the same exciting causes. This disposition to inflammation, occasioned by previous vascular excitement, is the great cause of the frequency of relapses, not only in cases of hepatitis, but also in other inflammatory diseases. A portion of the

vitality of the vessels being dissipated by means of inflammatory excitement, a collapse or exhaustion succeeds, which gives rise to functional derangement; and should the exciting causes of inflammation be again applied to vessels in this state of exhaustion, they will be again thrown into inflammatory action; the violence and danger of which will be proportioned to the degree of debility or collapse existing in the affected organ.

Another and probably the most frequent termination of inflammation of the liver, is adhesion, produced by the effusion of coagulating lymph from the inflamed vessels. As this lymph may be effused on any or in any part of the liver, so adhesions may take place in any part of that organ. On dissection we frequently find the convex surface of the liver firmly connected with the parietes of the abdomen, by a thin membranous or fibrous expansion: this expansion consists of a condensed layer of coagulated lymph or fibrine, effused by the inflamed vessels of the liver. When this lymph is effused into the small vessels constituting the organization of the liver, they are blocked up and rendered impervious, and thus prevent the secretion of bile, or should it be secreted, they prevent it from flowing into the biliary ducts; and thus consti-

tute organic obstructions. In some cases the effusion takes place from the vessels of the biliary ducts, and agglutinating together the sides of these ducts prevents the flow of bile into the intestines, and thus gives rise to indigestion, anorexia, and jaundice; and a host of other symptoms and diseases, which are either occasioned by a deficiency of bile in the intestines, or to its absorption and return into the mass of circulating fluids.

Another but a less frequent termination of inflammation of the liver, is suppuration. In this the organization of the part affected is entirely destroyed, and should it at any time involve the whole substance of the liver, the function of that organ must cease altogether. This however can scarcely happen, as an inflammation, so violent as to be followed by suppuration of the entire liver, must necessarily prove fatal before suppuration could take place. The author has frequently had occasion to examine by dissection the livers of individuals who had unfortunately fallen victims to tropical diseases, and he is warranted in saying, from his own experience, that suppuration of the liver is an event of much rarer occurrence than is generally imagined. Many cases have fallen under his own observation, where the symptoms of the disease had led

him to imagine, during the life of the patient, that suppuration had taken place in the liver, and on dissection he has found that he had been mistaken.

Suppuration however does frequently take place, and the pus forms for itself a cavity or cyst within the substance of the liver, constituting an abscess. Several of these abscesses are sometimes found, each separate and distinct from the others; an effusion of fibrine or coagulable lymph having formed around each abscess, a boundary or barrier which prevented the further diffusion of the pus, and constitutes the wall of the abscess. This effusion of fibrine, there is reason to believe, also limits the extent of the inflammation, by throwing around the inflamed part an inorganic barrier that prevents the extension of the inflammatory action.

To what an extent derangements may take place in an organ, without destroying life, is well exemplified in the pathology of the liver. This organ frequently continues to perform its function, when part of its organization is entirely destroyed by the formation of abscesses, and part of it completely obstructed by depositions of coagulable lymph. The great bulk of the liver favors the performance of its function under these circumstances; for

although a considerable part of it may be obstructed or useless, the secretion of bile may be carried on by the remainder; and although a patient, with such a liver, cannot be expected to enjoy perfect health, by care and attention he may live many years.

OF DYSENTERY.

In European soldiers, whom we have principally in view in what we have to say on the subject of dysentery, a frequent cause of the disease is an excessive use of vegetables and fruit. Perhaps sufficient attention is not always paid to the cooking or boiling of vegetables for soldiers. The barracks in which soldiers are quartered are usually surrounded with grassy swards, which continue wet for a considerable time after every occasional shower of rain: when the men return to their barrack rooms, heated from duty or other exercise, they frequently take off their shoes and go into this wet grass for the purpose of cooling themselves. The consequence is sometimes fever, but more generally dysenteric inflammation.

We have likewise had occasion to observe, that in very hot weather, when a copious perspiration is occasioned by moderate exercise, the soldier when he returns to his barracks, which in the West Indies are generally situate on elevated ground, throws off his jacket. The air on those elevated situations, even on the hottest days, is keen and piercing; and the body being heated and the pores open, the current of blood is directed from the surface to the centre by the impression of a keen atmosphere, perspiration is suddenly checked, the vascular system deranged, probably fever with its more serious consequences ensues, but in general it produces a determination of blood to the intestines and occasions an attack of this disease.

We must not omit to mention the quality of the water, in many of the West-India islands, as a frequent cause of dysentery. In Antigua, St. Vincent, and some of the other islands, the water which is generally drunk is rain water, collected in tanks or reservoirs; this, if sufficient care is taken to keep it free from foreign impregnations, may be considered the purest kind of water. But in many of the islands the water is procured from springs, very often brackish or impregnated with muriate of soda and other foreign substances, according

to the different strata through which it filters. These impregnations, whether saline or metallic, generally act on the alimentary system. In Guadaloupe, the water drunk by the troops and in general by the inhabitants is a compound of rain and spring water. There the rain is collected in deep pits or wells artificially made; should any saline or mineral substances be present in the earth surrounding these wells, the water will of course be impregnated with their qualities. Accidental occurrences, and alluvial depositions, occasionally carry into them quantities of vegetable matter, the putrefaction of which is favoured by the depth and narrowness of the wells; and the gases evolved, combining with the water in the wells, renders it highly noxious and injurious to health.

In some of the islands they have an opportunity of using river water, but these rivers or streams commonly flow at the bottom of deep ravines overhung with trees and shrubs of different kinds and qualities, the leaves of which are constantly dropping into the water; and as some of these shrubs are possessed of deleterious qualities, they must necessarily communicate similar impregnations to the water. These leaves also, being acted on by the sun's rays and the oxygen of the atmosphere, are thrown into a state of active putre-

faction, and thus also communicate to the water the products of their decomposition. In addition to those circumstances, the water of these rivers is applied to the different purposes of domestic economy in the different villages and estates through which they pass; by all which together it acquires properties that render it equally injurious with the water contained or collected in wells.

To the above causes of this disease, we may likewise add the state of the atmosphere, whether as influenced by changes of weather or by local causes. Where people reside in marshy situations, in low swampy grounds, or in the neighbourhood of them, or near pools or collections of stagnant water, they are necessarily exposed to the exhalations arising from them. The rays of the sun acting on such places occasion an evolution of noxious gases, which of course will be proportioned to the degree of heat and the quantity of matter present capable of producing them. The surrounding atmosphere is impregnated with these exhalations, and the effect of them will be more or less sensibly pernicious, according to the distance at which barracks or other habitations are situate. At what exact point of distance we are without the range of their pernicious influence, or to what distance

such impregnations are carried in the atmosphere before they become so much diluted as to lose their pernicious qualities, we are not prepared to say; probably it cannot be estimated. These noxious exhalations, or marsh miasmata, are the well-known causes of intermittent and remittent fevers; but when the other causes already mentioned exist at the same time, or where there is present in the system a predisposition to dysentery, they may also become exciting causes of this disease.

When wet and rainy weather has been succeeded by weather hot and sultry, it has frequently been observed to occasion the disease; perhaps by inducing a change in the atmosphere similar to that above noticed.

It has been generally supposed that European soldiers, of a full and plethoric habit of body, and arriving in the West Indies in high health, are the most likely to be attacked with dysentery. Our own observations however induce us to be of a different opinion. Perhaps the causes which in others might occasion dysentery, if applied to subjects of the above description, would be more likely to occasion an attack of fever. The description of persons on whom we have observed this disease most frequently to make its attacks, and to whom it more frequently proves fatal, are those who

have led a sedentary and dissipated life before going to the West Indies: such are tradesmen, manufacturers, and artizans of every description, and such others as have indulged freely in the use of spirituous liquors, and who never had been accustomed to much exercise or bodily exertion. Such are easily distinguished by a weakly habit of body, a pale and squalid complexion, a want of energy, and an incapability of enduring much toil or fatigue; on the least change, whether of water or of food, or even of air, such subjects are likely to be attacked with dysentery; such a subject we have seen to pass through a military hospital more than twenty times for the same disease, and although as often relieved by medicine and medical assistance, at length fall a victim to its repeated attacks.

We shall finish this account of the causes of dysentery, with one which probably occasions the disease more frequently than all the other causes already enumerated: that is, the application of too great a stimulus to the stomach and alimentary system. So fond are people generally throughout the West Indies of using powerful stimulants, that, not satisfied with the stimulus of wine, brandy, rum, &c., they swallow at their meals large quantities of the hottest peppers (the capsicum annuum) which

that country produces. So stimulating are these peppers in their recent state, that if rubbed to any part of the surface of the body, they will occasion a detachment of the cuticle almost as effectually as the application of cantharides. The stomach accustomed to such powerful stimulants refuses to perform its functions without their application, and even these by long habit lose their effect, and induce a necessity for drams and cordials. What wonder that the continued application of such powerful stimulants, to the delicate surfaces of the lining membrane of the stomach and alimentary canal, should be attended with such serious consequences!

SYMPTOMS OF THE DISEASE.

An attack of dysentery is usually attended with the following symptoms, in a degree proportioned to the mildness or malignity of the disease. Increased heat—frequency of pulse—fever, with its usual concomitant symptoms—tongue foul, and covered with a white or yellow incrustation—griping pain and tenesmus—stools frequently streaked with blood and purulent matter. In some cases, pure blood is voided. In most cases, the quantity of fœces passed is not equal to that which is passed during health, although attended with

tenesmus and a frequent desire to go to stool. In some instances, the stools are frequent, copious and watery, and without any pain; the matter passed in these cases frequently comes away involuntarily, and never acquires any consistence before evacuation. But whether the stools are attended with tenesmus and pain in the abdomen, or whether they are thin, watery and green, and unattended with pain, the disease is invariably attended with some degree of derangement of the vascular system. Such are the symptoms which usually mark this disease in the beginning, but they afterwards change or vary according to its different degrees. When slight, and the proper remedies have been administered in the beginning, the griping pain and bloody stools commonly cease in a few days; the pulse, from being feverish, becomes regular, and the functions return to their natural state; perhaps a slight purging without pain may continue for a few days afterwards, but it gradually yields to the application of proper remedies.

Such is the progress of dysentery in its mildest form, but we are not always to look for so favourable a termination. Sometimes the purging pain and bloody stools continue or become aggravated, notwithstanding the most judicious treatment; the abdomen on

pressure feels acutely painful; the tongue is covered with a black incrustation, which, however frequently removed, is almost immediately re-produced; the pulse becomes small, wiry and tremulous, indicating diseased action among the intestines; a pungent and deep-seated heat is felt in the skin, and the countenance expresses an indescribable anxiety. When these symptoms have continued for some time, the breath becomes fœtid and cadaverous, a vomiting of fœces frequently takes place, the skin and extremities become cold and clammy, a convulsive hiccup supervenes, a paroxysm of which generally terminates the sufferings of the unfortunate victim. Such cases of the disease as we have seen prove fatal, were attended throughout with a peculiar cast of countenance, with an anxiety indicative of its fatal termination. This peculiarity of cast or expression of countenance cannot be described, but is easily known by a little observation, and when present is the surest indication of the fatal tendency of the disease. The powers of life are gradually and imperceptibly exhausted, while the patients themselves, retaining the perfect use of their mental faculties, appear entirely unconscious of their approaching dissolution. In most instances, the purging, griping and slimy stools, with the

other symptoms which characterize the disease, yield to and are removed by proper treatment; the patient gradually gains strength, and apparently well is discharged from hospital, but if he be a subject on whom the disease has already made many attacks, or whose constitution has suffered from former irregularities,as soon as he returns to his former habits so soon will the disease again make its appearance. The constitution at length, worn out by its repeated attacks, is incapable of renovation; the digestive organs can no longer perform their functions; medicines, which were capable of removing the disease, lose their efficacy; the patient gradually sinks; a convulsive hiccup supervenes, a paroxysm of which generally puts an end to his sufferings.

APPEARANCES ON DISSECTION.

As information essential to the treatment of dysentery can be derived from the examination of the bodies of those who have fallen victims to it, and having taken every opportunity of making such examination, we shall state what the appearances were on dissection of such as have fallen under our own observation, and also what we conceive to be the practical inferences deducible from those morbid changes.

The stomach and alimentary canal, being the parts more immediately the seat of the disease, they of course claim the first attention. On cutting into the stomach, the lining membrane or villous coat is found considerably thickened. Blue or livid spots are found in different parts of this membrane, occasioned no doubt by the commencement or actual existence of gangrene; and an increased vascularity and enlargement of the vessels may be observed in every part of the stomach. In some cases, we have found the inner surface of the stomach bedewed with a fluid not unlike pus in colour and consistence, probably fibrine or coagulable lymph effused from the inflamed vessels; but the symptom most particularly worthy of notice, and which in almost every instance we have found to be present, is the dark and livid colour of particular parts or spots, clearly evincing a gangreneous termination and the previous existence of inflammatory action.

The same morbid appearances could be traced throughout the duodenum, but in it the gangrenous spots are seldom so conspicuous as in the stomach, but the increased vascularity and thickening of the lining membrane are in general equally evident. In the small intestines the appearances of disease could seldom

be observed, perhaps an increased vascularity might be remarked, but not to such a degree as to constitute a morbid appearance. In the large intestines, the colon and rectum, the appearances of disease were as clearly marked as in the stomach or duodenum. We have generally observed that the progress to gangrene has been more advanced in the rectum than in the colon, while the appearance of active inflammation has been greater in the latter. The fluid resembling pus, which we before remarked to have been occasionally observed in the stomach, we have also frequently observed in the colon, seldom in the rectum. In cases where tenesmus had been frequent and distressing during the disease, the progress of gangrene in the rectum was found on dissection to be very considerable.

The morbid appearances of the mesentery are no less interesting. Adhesions—a morbid thickening of its laminæ—increased vascularity and enlargement of the mesenteric vessels—hardness and obstruction of its glandular organization—are among the vestiges of the pernicious and destructive ravages of this disease on the mesenteric system. The lacteals, whose office among the absorbents justly claims the chief consideration, as renovating the exhausted fluids and solids by the absorption of

properly assimilated chyle, in the above-mentioned state of the mesentery are rendered inactive. They are either rendered incapable of taking up the chyle which is intended to supply the continual waste of both solids and fluids, or if capable of absorbing, they can transmit it no further than the mesenteric glands, whose diseased structure deprives the other parts of their accustomed and necessary supply. Thus the disease frequently proves fatal, not so much in consequence of debility induced by frequent evacuations, as for want of the necessary nourishment, which is refused to the system from the diseased condition of the organs of digestion. Various are the morbid appearances of the liver in such as die of this disease. The following are the most frequent. Adhesions to the parietes of the abdomen, and to the adjoining viscera, by effusions of fibrine or coagulable lymph, and indicating the pre-existence of inflammatory action. Thickening of the coats of the biliary ducts—obstructions of those ducts—distention of the gall bladder. The liver we have sometimes found enormously enlarged, not only filling entirely the right hypochondrium, but extending across the epigastric region and pressing on the stomach. We have seen the liver thus enormously enlarged, when no other

appearance of disease could be detected in its substance. In some few instances, on cutting into the liver, collections of pus have been found; we have occasionally found the liver in colour and consistence to bear a great resemblance to a section of new cheese. In one case, even the gall bladder, instead of its usual dark colour, had the same caseous appearance.

From the above morbid appearances among the organs concerned in dysentery, we must infer that some degree of inflammation of the chylopoietic viscera either precedes or accompanies the disease. To this it may be said, that if inflammation were always present in organs so essential to life, the disease would be likely to prove more frequently fatal. We must however recollect, that in those cases where it has proved fatal, and consequently where we have had an opportunity of examining the parts by dissection, the morbid or diseased state of these parts was not the effect of one or two or perhaps of ten attacks of dysentery; probably it was only after a series of twenty attacks that the disease had proved fatal. What change might have been produced in these organs by a single attack, and from which the patient had recovered, we can only conjecture; but it is probable that by the frequent returns of the

disease, such a diseased state of these organs may be induced as would ultimately admit of no cure.

To mention the morbid appearances of the lungs, when treating of dysentery, is to mention what apparently has no connection with that disease. We have examined however several subjects who appeared to have been worn out by chronic dysentery, and have found in some of them the lungs as much diseased as in some others that had died of phthisis pulmonalis. In one case, in particular, the left lobe of the lungs had been entirely absorbed, the root only remaining; whilst the right lobe adhered firmly to the pleura of that side by flakes of coagulable lymph, and when seperated and cut into, was found to contain pus in the bronchial ramifications, although this patient had no cough nor any other symptom of an affection of the lungs, but had been for several years before subject to frequent attacks of dysentery. It is not intended to infer from this, that there is any thing in common in dysentery and pulmonary consumption, but if such a state of the lungs could have existed without evincing itself by any manifest symptoms, we may reasonably conclude that both these diseases are combined more frequently than is generally imagined.

TREATMENT OF DYSENTERY.

From the pathological principles deducible from the morbid appearances above described, the following would appear to be the indications of cure. To remove inflammation and the causes producing it—to remove obstructions and to remedy morbid changes in the chylopoietic viscera—and lastly, to obviate the laxity of the intestines, and strengthen the debilitated organs. The remedies calculated to effect these several purposes, may either be used in the order above mentioned, or may be alternated with each other as circumstances may indicate or particular symptoms may appear to require.

For the removal of inflammation and the causes producing it, bleeding and the saline purgatives are the principal remedies. The saline purgatives should be given in small doses, largely diluted, and frequently repeated; as the exhibition of a large dose might increase irritation. As the presence of irritating bodies, such as hardened fœces in the intestines, is frequently a cause of considerable excitement, the oleum ricini may be sometimes more effectual than saline remedies; particularly should great pain and tenesmus accompany the disease. These

remedies, with low diet, diluting drinks, such as rice-water, toasted water, barley-water, &c. taking care to avoid every thing of a heating or stimulating quality, will be the most likely means of accomplishing the first object.

To remove obstructions and to remedy diseased changes in the organization of the viscera, on mercury we must place our chief reliance. It may either be given in the form of pill or introduced by friction in the form of ointment. In either way, the use of opium at the same time will greatly assist its effects, by preventing it from passing off by the bowels, and by allaying irritability of the general system.

When the disease continues, notwithstanding the use of the above remedies, and is not attended with pain or any considerable degree of fever, it may be advisable to have recourse to astringents. When that is the case, the sulphas aluminis, pulvis cretæ, compositus cum opio, gummi acacia, with occasional opiates, are the best of this class; and in most cases it will be advisable to continue at the same time the occasional use of mercury.

In general we should commence the treatment by bleeding: the disease however occurring most frequently in persons of a weakly constitution and an emaciated habit of body,

we are in consequence deterred from using the lancet; and as these changes are not the effect of one or two, but of many and repeated attacks of the disease, it is probable that in this advanced stage but little benefit will be derived from using the lancet. Should the bowels however be painful, we should certainly bleed, whatever may be the degree of general emaciation; and in every case where the habit is full and plethoric, with a constitution unimpaired by disease, the lancet should be used, as it appears likely not only to remove the disease for the present, but may likewise prevent its future recurrence.

The quantity of blood that should be taken away will depend on a variety of circumstances; it may even vary from fifteen to fifty ounces; but as the necessity for the operation must in every individual case be determined by the judgment of the medical practitioner, to the same must be left the decision of the extent to which the operation should be carried.

Having commenced the treatment by bleeding, to the extent that may be judged necessary, we next should exhibit the neutral salts. The sulphate of magnesia may be given in the quantity of two drachms dissolved in about eight ounces of barley water or common water, a little warm, three times a day. By con-

tinuing this medicine, the griping pain and bloody stools are usually removed in two or three days. The stools at this period very generally change their colour and consistence, and become white, thin and slimy; we may now begin the use of mercury, either internally or externally: in general it is better to begin with the internal use of it. Submuriate of mercury may be given in the form of pill, combined with a small quantity of opium; the dose may be two grains of the submuriate with a quarter of a grain of opium, three times a day. These remedies usually put a stop to the disease, when slight, in the course of a few days; but should pain or purging continue or recur after the system has been affected by the mercury, we must again have recourse to neutral salts, with opiates at night. By thus keeping up a slight soreness of the gums, by alternating the use of mercury with neutral salts and opiates, at night, as symptoms may indicate, the disease in most instances will yield to this treatment.

In cases where the patient is much reduced and emaciated by frequent relapses, where the stomach and bowels are much injured and irritable, it may be more advisable to introduce mercury by friction on the thighs; giving an opiate at night, during the use of the mercury.

Whilst pain and soreness of the abdomen continue, the use of purgative medicines will in general be necessary; but should these symptoms continue after using saline purgatives for a few days, where the habit of body is weakly, it will be more advisable to endeavour to remove them, by the oleum ricini with opiate enemas and fomentations, to the abdomen, than to persevere in the use of saline purgatives; as the long continued use of the latter will greatly increase the debility of the system. Besides which, in weakly habits, the soreness of the abdomen may not depend so much on the presence of hardened fœces or other irritating substances, but may be occasioned by an ulcerated state of some part of the intestinal canal, and be more likely to be increased than alleviated by the use of neutral purgatives.

In most cases, dysentery will yield to the treatment above recommended, in a longer or shorter time according to the different degrees of the disease. The cases which commonly occur in practice, will generally yield to the use of neutral salts, with such a regimen as is usually adopted for the removal of inflammation. The severer attacks will require the use of mercury, for a longer or shorter period, according to the mildness or malignity of the

disease. Few cases will be met with in which the griping, purging and other dysenteric symptoms, will not cease when the system has been brought under the influence of mercury; and whenever the disease continues after the mercury has produced the usual effects on the system, there is reason to fear that some diseased change or organic affection exists among the abdominal viscera. Where this is the case, it is usually characterized by great debility and general emaciation; by a squalid, shrunk and dejected countenance; frequent stools of various colours, sometimes green, thin and watery, but oftener dark, brown and fœtid. The tongue is usually covered with a black incrustation in the centre, whilst the edges are unusually red. Black sordes collect about the teeth and gums, and the breath becomes very offensive. At this stage of the disease, besides continuing the use of mercury, we must also have recourse to astringents, and should give a more nourishing diet, with opiates, in order to support the strength of the patient, and give the mercury, on which we must still rely, the greater chance of removing those diseased obstructions. The unguentum hydrargyri will now be preferable to giving mercury by the mouth, which at this stage of

the disease would be likely to increase the irritability of the stomach and intestines.

The pulvis cretæ compositus cum opio, sulphas aluminis, gummi acacia, are among the best of the class of astringents: the unguentum hydrargyri may in the mean time be rubbed to the inside of the thighs, in the quantity of half a drachm three times a day, giving occasionally saline draughts with a few drops of laudanum, to allay the irritability of the stomach.

From the beneficial effects of charcoal when externally applied to ulcerated surfaces, Dr. Jackson was induced to recommend the internal use of it in those cases of dysentery in which there was reason to apprehend the existence of ulceration in the intestines. The author gave the remedy an extensive trial in cases of the above description, and although he has frequently had reason to think that it was attended with good effects, he cannot speak highly of its general success; and the examination of subjects with whom this medicine had been tried, has convinced him that it is not capable of healing ulcerations of the intestines. The dose of the charcoal may be fifteen grains or a scruple, three or four times a day.

In a few cases we have observed that the purging, bloody stools, and other dysenteric symptoms, yielded to the use of mercury, although the mercury did not affect the system in the usual way. The appetite was good, a nourishing diet was given, the purging did not recur, and yet the patient, instead of recovering flesh or strength, became every day more exhausted and emaciated, and at length sunk under the disease. In these cases, the vessels and glands of the mesenteric system were found, on dissection, so changed and diseased, that it is probable death was occasioned by the want of nourishment, owing to the obstruction of the mesenteric glands. This view of it affords also an explanation why mercury did not affect the system in these cases, although given pretty freely; the diseased state of the vessels having prevented its absorption.

Cases will be met with in practice, in which some purging will still continue, notwithstanding the above treatment; and even should the purging cease altogether, the habit of body will become daily more emaciated, and the patient will at length sink under the disease. But in general, in such patients, some other organic disease will be found combined with the disease of the bowels; and if the subject be afterwards examined by dissection, most pro-

bably extensive abscesses will be found in the substance of the lungs. Many cases of this description will be met with in the army, where we shall find patients of a weakly constitution exhausted by frequent attacks of disease; probably slight coughs or colds alternating with frequent attacks of dysentery. Whenever such cases occur, and the chest appears in the least affected, we should not direct our sole attention to the disease of the bowels, although apparently the most urgent complaint. We should, if the strength will admit of it, take away some blood from the arm, apply blisters between the shoulders and also to the chest, and rigidly enforce abstinence from wine and every thing besides of a heating or stimulating quality; although the exhausted condition of the patient might seem to indicate the use of wine. For the affection of the bowels, in this case, we should immediately administer astringents, with mercury and opiates, without the previous exhibition of neutral salts. Should pain and tenesmus be present, we should endeavour to remove them by the oleum ricini, enemas, fomentations, and opiates.

Cases of a very different description will also be met with in practice, in patients of a full and plethoric habit of body, in whom,

notwithstanding the use of bleeding, purging, and the strictest attention to an antiphlogistic plan of treatment; the pulse will continue full and strong, the skin hot and dry, the tongue parched and furred, and the bowels painful, even after the frequent use of purgatives and opiates. These cases would seem to have something in common with the endemic fever of the climate, and we have seen them yield to the remedies usually adopted for the removal of fever, after the usual remedies for dysentery had been tried unsuccessfully. Calomel combined with Dr. James's powder, or with antimonial powder, should be given, and their effect assisted by aqua acetatis ammoniæ and the warm bath. By this treatment, a diaphoresis is produced; the pulse becomes soft, the skin cool and moist, and the griping and other dysenteric symptoms, usually cease.

Unless the operation of some of the above-mentioned causes should prevent it, most cases of dysentery will, in a short space of time, yield to bleeding, neutral salts, mercury, opiates and astringents, used in the manner already recommended. But we should not be content with simply removing the disease, for it is a fact, well established by experience and observation, that those who have once been attacked with dysentery are very subject

to a recurrence of that disease. We should therefore endeavour as much as possible to strengthen the alimentary system, before the patient is freed from the restraints of regimen, or allowed to return to his usual habits, and usual mode of living. For the causes which had first produced the disease, will be more likely to re-produce it, when the organs of digestion have been weakened by its effects.

In order to strengthen the alimentary system and to prevent a relapse, we should give internally infusions of gentian, calombo, quassia, or camomile. The patient should be removed, if possible, to a drier and purer atmosphere; moderate exercise should be recommended, and the use of salt or highly seasoned provisions should be altogether interdicted. By these means, the organs of digestion will recover their tone, and should there be no organic affection, a recurrence of the disease may in general be prevented.

Before leaving the subject of dysentery, it may not be amiss to say something about the means of avoiding a disease, which, as has been already shown, however judiciously treated, gains ground on the constitution by its frequent returns, and too often in the end baffles the power of medicine and science. It has been shown that in general the disease

can be easily removed in its first attacks, but that a susceptibility for its return remains in the constitution. It is not the disease abstractedly considered that is dangerous; but the effects of it on the constitution we have just reason to fear; and as a great deal may be done towards preventing these effects by a knowledge of their exciting causes, we shall endeavour to point out the most likely means of preventing or avoiding the disease.

In treating of the causes of dysentery, we have already mentioned the application of too great a stimulus to the stomach and alimentary system. The heat of the West Indies is certainly very great, and even a person of the most resolute temperance will of necessity use and require a greater quantity of drink than in a colder climate. The necessity of using a greater quantity of liquids we must admit, but it is in the quality of this drink that the source of error originates. An opinion is generally entertained, and certainly a correct one, that to drink cold water when the body is heated is dangerous: to avoid this danger, rum, brandy, or some other stimulating spirit, is generally mixed with the water. This is very well when it is necessary, but by acting too far on this principle, and becoming habituated to such drinks, whether the body is heated or

not, cold water is seldom drunk without an admixture of some stimulating liquor. We have already shown that a considerable quantity of liquids, of some kind, must necessarily be drunk in such a climate, and if spirits are always mixed with it, a large quantity will of course be daily introduced into the system; and if (as we believe will be readily admitted) spirituous liquors stimulate the system, beyond that state which is consistent with health, this misapplication or rather abuse of a principle, in itself correct, becomes a great and frequent source of this disease.

To prevent the injurious effects of stimulating drinks, it is advisable that, when heated and thirsty from exercise or exertion, we should endeavour to resist the desire for drink until we shall become sufficiently cool, when even cold water may be drunk with impunity; but as we admit that it will sometimes happen, after much exertion and fatigue, that the calls of nature for drink cannot be resisted, we will allow that on such occasions spirits should be mixed with the water. But surely there is no reason that when perfectly cool, and without having undergone any fatigue, we should think it necessary to use as common drink, what only extraordinary occasions can require.

Thus much may be said with respect to the quality of the drink usually made use of in the West Indies, and its effects in producing the disease under consideration; but another cause, not usually noticed, contributes in no small degree to the same end: we mean the quantity of drink. In the temperate climate of Europe, the desire for drink is only occasioned by the calls of thirst, whilst in the scorching climate of the West Indies, whether from habit or from the association of ideas (the heat of the climate suggesting the necessity of drinking) or from whatever other cause, the calls of thirst are usually anticipated.

The stomach being accustomed to be kept distended with this great quantity of liquids, occasions an artificial thirst, or rather a necessity for such distension. The vessels become relaxed and their tone destroyed. The uncomfortable feeling occasioned by such a state of the stomach is momentarily relieved by the use of stimulants, and which on these occasions are usually resorted to—but which in the end aggravate the symptoms; a chronic inflammation of the vessels of the stomach at length succeeds to this their debilitated state, and shortly is attended also with an affection of the vessels of the alimentary system.

We shall here introduce a few cases of dysentery, treated by the author in his own regimental hospital; in order to elucidate further the principles of the treatment here recommended.

George Smyth, of the Royal York Rangers, thirty-six years of age, was admitted to hospital on the 15th of October 1815. He complained that he had been ill with a complaint in his bowels ever since the arrival of the regiment in Trinidad (about three weeks); at present he complains of griping pains—frequent stools, attended with tenesmus—pulse frequent—skin hot—nausea—tongue foul—stools fœculent and tinged with blood.

Detrahatur Sanguis ad ℥xl.
Capiat statim Submuriatis Hydrargyri gr. xij. et post horas tres Sulphatis Sodæ ℥iss.

The above medicines operated well; the griping and tenesmus were considerably relieved.

℞ Pulv. Ipecacuanhæ Comp. gr. xvj.
Capiat hora 8va vespertina.

Oct. 16th.—Pulse and heat more natural—stomach retentive—griping pain and tenesmus

removed—stools still frequent and tinged with blood.

℞ Submuriatis Hydrargyri gr. iij.
Extracti Opii gr. ss. M. fiat Pilula quater in dies capienda.
Capiat hora somni Pulv. Ipecac. Comp. gr. xv.

17th.—Pulse and heat about the natural standard—stools still fœculent and tinged with blood; in other respects is much better. Diet—tea and arrow root. Drinks—barley water and toasted water ad libitum.

℞ Sodæ Sulphatis ℥iss.
Infusi Gentianæ Compositi ℥viij. M.
Capiat ℥ij. quater in dies.

In the evening the following was prescribed.

℞ Tincturæ Opii guttas xxxx,
Aquæ Acetatis Ammoniæ.
Aquæ Communis āā. ℥j.
Syrupi q. s. M. fiat haustus hora somni capiendus.

18th.—Slept well during the night—stools natural—tongue clean and moist.

Omittantur Medicamenta.

This patient was discharged on the 21st, perfectly cured.

About this period (October 15th) the regiment had been paid off the balances of pay due to the soldiers, for the first time during six months. The regiment having been employed on active service during that time, their pay could not be given them; in consequence of this, large sums were received by each soldier, and an indulgence from parades was for some days granted them. In the course of two days fifty patients with dysentery were received into hospital, occasioned by excesses with ardent spirits, together with exposure to the scorching rays of the sun during the day and the chilling damps during the night, while under the influence of these excesses. All these cases were treated in the same way as the case here reported, and they all terminated favourably.

William Carman, of the Royal York Rangers, about twenty-nine years of age, was admitted to hospital on the 20th of December 1815. He had been ill some time, and had tried to conceal his indisposition. When admitted, he complained of excruciating pain in the bowels and stomach—pulse hard, frequent and wiry—countenance pale, shrunk, anxious and dejected.

Detrahatur Sanguis ad ℥xl.
Capiat Submuriatis Hydrargyri ℥j. et post horas duas Sulphatis Sodæ ℥iss.
Enema purgans statim injicietur et repetatur post horas tres si Opus erit.
Balneum tepidum.

Vespere.—Bowels not sufficiently open—pain continues severe.

Capiat statim ℥ij. Olei Ricini.

Hora 8va. Vespertina.—Bowels well evacuated—pain much relieved.

℞ Tincturæ Opii gtt. xxxx.
Spiritus Ætheris Nitrosi ℥iss.
Aquæ ℥j.
Syrupi q. s. M. fiat haustus hora somni capiendus.

Dec. 21st.—Pulse small, hard and wiry—face pale—features shrunk—pain in the bowels intolerable—skin hot and dry—tongue dry and parched—thirst excessive.

Detrahatur Sanguis ad ℥xx.

℞ Submuriatis Hydrargyri ℈j. Capiat statim et postea Olei Ricini ℥ij.
Balneum tepidum. Enema purgans 2dis horis.

Vespere.—Bowels still painful, although freely opened—much tenesmus and uneasiness about the rectum.

Capiat statim Olei Ricini ℥ij.
Repr. hora somni haustus anodynus.

22d.—Pulse frequent—skin parched and dry—tongue furred—countenance pale and shrunk—bowels still painful.

℞ Sulphatis Magnesiæ ℥iss.
Aquæ Communis ℥viij. M. Capiat ℥ij. 4ter in dies.
Balneum tepidum.

Vespere.—Has been much purged—skin hot and dry—pain of the bowels a little relieved.

℞ Submuriatis Hydrargyri gr. xij.
Pulv. Jacobi gr. v. M. Capiat hora somni.

23d.—Pulse small and wiry—bowels a little easier—countenance shrunk—tongue parched and furred.

℞ Submuriatis Hydrargyri gr. iij.
Extracti Opii. gr. ss. M. fiat Pilula 4ter in dies capienda.
Balneum tepidum.
Capiat hora somni Pulv. Ipecac. Comp. gr. xvj.

24th.—Symptoms as yesterday.

Contin. eadem Medicamenta.

25th.—Pulse small and frequent—bowels still painful—stools white and slimy—tongue covered with a brown incrustation.

℥j. Olei Ricini statim.
Haustus Anodynus hora somni.

26th.—Pulse small and quick—bowels tolerably easy—tongue still furred—eyes more lively—countenance less anxious—skin warm and moist.

Contin. Pilulæ Mercuriales cum Opio ut supra.
Balneum tepidum et Haustus
Anodynus hora somni.

27th.—Continues as yesterday.

Contin. eadem Medicamenta.

28th.—No alteration in the symptoms.

Contin. Medicamenta.

29th.—Pulse and heat natural—bowels easy—mouth slightly affected with mercury.

Discontinuentur Pilulæ.
Habeat Gargarisma et Haustus Anodynus hora somni.

This patient continued to recover, and was discharged from hospital on the 6th of January, perfectly cured.

This case of dysentery was one of the most severe that had occurred in the regiment for a considerable period. The subject of it was the author's own servant, and he had concealed his disease as long as he could. From his intemperate habits, and from the length of time he had been ill, it was apprehended that

gangrene would set in among the abdominal viscera before the means of preventing it could be put in operation. The shrunk countenance, and indescribable anxiety which attended it throughout, appeared to be the forerunners of what was apprehended. The treatment, as may be seen, was prompt and decided; it was also completely successful.

A CASE OF CHRONIC DYSENTERY.

Michael Dougan, of the Royal York Rangers, twenty-three years of age, was admitted to hospital at Trinidad, on the 25th of September 1815. He had been a long time in hospital with dysentery at St. Lucia, and was embarked from the hospital when coming to this island. His present symptoms are an extreme emaciation—stools frequent, but without pain—little appetite—pulse small, wiry and frequent.

Capiat Sulphatis Magnesiæ semunciam.
Capiat hora somni Pulv. Ipecac. Comp. gr. xv.

Sept. 26th.—Bowels easy—feels no pain—the frequency of his stools, and extreme emaciation, are the most prominent symytoms.

℞ Submuriatis Hydrargyri gr. iij.
Extracti Opii gr. ss. M. fiat Pilula 4ter in dies capienda.
Affricetur femoribus internis Unguenti Hydrargyri drachma una quotidie.

27th.—Continues in the same weakly state.

Contin. Medicamenta.
℞ Tincturæ Opii guttas L.
Aquæ ℥j.
Syrupi q. s. M. fiat haustus h. s. capiendus.

Oct. 2d.—The use of mercury has been continued since his admission, with an opiate at night—the mouth is not yet in the least affected—stools thin and frequent—the habit of body becomes every day more emaciated—he has an appetite for food, but what he takes seems to convey no nourishment to the system.

℞ Aluminis Sulphatis
Pulv. Cretæ Comp. cum Opio āā. ℈j. M. et divide in chartas iv. capiat unam 4ter in dies.
Contin. Unguentum Hyd.

10th.—The last prescribed remedies have been continued since the last report, without producing any change of symptoms worthy of notice. The object of this treatment was to obviate the laxity of the intestines by means of the astringents, and to remove obstructions by the introduction of mercury. During the

use of these medicines he occasionally complained of griping, which was always relieved by a dose of the oleum ricini and an opiate at night. The mercury has produced no effect on the salivary glands, although the use of it has now been carried pretty far; nor has it produced any good effect on the general system, as the habit of body becomes daily more emaciated. Sordes now frequently collect about the teeth and gums—the stools are frequent but without pain—and the constitution appears gradually sinking.

Discontinuetur Unguentum Hyd.
Continuentur Pulveres Astringentes.

20th.—The daily report since the 10th would be only a repetition of the same symptoms. The astringents have been continued with opiates at night, and an occasional dose of the oleum ricini when griping occurred. No change has taken place in the symptoms, but that a greater degree of emaciation may be remarked, the patient being now a mere skeleton. He expressed a wish for porter, which is now allowed him, not with any expectation of removing the disease, for that appears now impossible, but to satisfy his wishes, and to soften as much as possible the anxieties of a lingering termination.

This patient lingered on till the 2d of November, during which time a chalk mixture, with starch enemas, occasional draughts of æther, laudanum, &c. were the medicines continued. No good effect was expected from any medicines, but to discontinue the use of them would be to tell the patient that his case was hopeless, which most likely would have increased his mental anxiety, and shortened the period of his existence.

DISSECTION.

Thickening of the mesentery—induration of its glands—the liver unusually firm, and containing hard, gritty substances in several parts of its substance—increased vascularity of all the intestines—dark livid spots in several parts of the lining membrane of the stomach and colon—pus in the bronchial ramifications of the lungs.

The history of this case contains the same progression of symptoms and the same treatment as every other case of dysentery in the regiment that has proved fatal. This patient had been in hospital with the same disease frequently, perhaps fifty times, before the disease proved fatal: at length the constitution

was worn out by its frequent returns, and the patient sunk under the disease in a state of extreme emaciation.

Thomas Hanley, of the Royal York Rangers, was admitted to hospital on the 23d of November 1815. He says he has been ill several days. He has been frequently in hospital before with bowel complaints. Age about twenty-nine years—habit of body bloated, and of a dropsical diathesis—at present he complains of intolerable pain in the abdomen—pulse frequent and hard—countenance pale and expressive of great anxiety—stools tinged with blood—tongue furred.

Detrahatur Sanguis ad ℥xl.

℞ Submuriatis Hydrargyri gr. xij. capiat statim et post horas ij. Sulphatis Sodæ ℥iss.
Balneum tepidum.

Vespere.—Feels relieved by the bleeding—bowels still painful.

℞ Tincturæ Opii. gtt. xxxx.
Aquæ Communis ℥j.
Syrupi q. s. M. fiat haustus hora somni sumendus.

Nov. 24th.—Pulse frequent and hard—tongue furred—stomach irritable—bowels still painful.

℞ Submuriatis Hydrargyri gr. iij.
Extracti Opii gr. ss. M. fiat Pilula 4ter in dies capienda.
Enema Opiatum ter in die.

Vespere.—Continues as in the morning.

Capiat hora somni Pulveris Ipecacuanhæ Compositi gr. xvj.

25th.—Pulse small, frequent and wiry—skin cool and moist—countenance shrunk and anxious—eyes languid—complains of a sensation of weight in the stomach and bowels—stools frequent and fœtid.

Applicetur scrobiculo cordis et toti abdomini Emplastrum Cantharidis Vesicatorii.

℞ Submuriatis Hydrargyri gr. iij.
Extracti Opii gr. ss. M. fiat Pilula 4ter in dies capienda.
Balneum tepidum. Enema Opiatum ter in dies.

Vespere.—Complains of griping and tenesmus—other symptoms as in the morning.

℥iss Olei Ricini statim sumenda.

26th.—Pain of the bowels still continues—stools fœtid and tinged with blood—pulse small and irregular—skin cool and clammy—features shrunk—countenance dejected and expressive of great anxiety.

℞ Submuriatis Hydrargyri gr. xv. fiat Pilula statim sumenda, et post horas ij. Olei Ricini unciam.

℞ Tincturæ Opii gtt. xl.
Aquæ ℥j.
Syrupi q. s. M. fiat haustus hora somni sumendus.

27th.—Feels easier this morning—pulse small and feeble—stools fœtid—eyes languid—face pale—complains of great debility.

Continuentur Pilulæ ex Calomelane cum Opio.
Enema Opiatum ter in die.

28th.—Pulse small and intermitting—eyes languid and glassy—tongue covered with a black incrustation—stools pass involuntarily, and are uncommonly fœtid.

℞ Carbonis Ligni
Camphoræ āā. gr. iv.
Extracti Opii gr. j. M. fiat Bolus secundis horis capiendus.
Enema Opiatum ter in die.

Vespere.

℞ Tincturæ Opii gtt. xxxx.
Aquæ ℥j.
Syrupi q. s. M. fiat haustus hora somni capiendus.

29th.—Pulse retiring—extremities cold—skin cold and clammy—eyes glassy—teeth covered with a black incrustation—stools fœtid and pass involuntarily.

℞ Tincturæ Opii gtt. xx.
Ætheris Sulphurici ℥ss.
Aquæ ℥j.
Syrupi q. s. M. fiat haustus omni hora capiendus.

Died about nine o'clock in the forenoon.

DISSECTION.

Nothing remarkable was found among the thoracic viscera. Marks of active inflammation were observable in the stomach, but the colon chiefly attracted attention. The whole of it was covered so thickly with fat, as to preclude the possibility of seeing its coats externally; when opened, it could scarcely be said to have any cavity through which the fœces might pass, and the inner surface of it was irregular and jagged like a cancerous sore; several parts of it were sphacelated, and in others, which were spongy like a honeycomb, pus was contained in the cells. The whole was in an advanced state of gangrene.

This last case of dysentery was the most remarkable that occurred in the regiment since its arrival in Trinidad. The subject of it had been frequently ill before with the same disease, but his death could not be ascribed to any chronic affection induced by former attacks. That he must have been ill a considerable time before he acknowledged it and was admitted into hospital, was evident from the sphacelated state of the colon, and the remarkable changes in its structure, which could not have been caused by a disease of only seven days duration, which was the period he

had been in hospital. Besides, had the disease been only in the incipient stage of inflammation, the remedies applied after his admission would most likely have arrested its progress, as the treatment was founded on the supposition of active inflammation among the viscera. It is probable however that inflammation was not only considerably advanced, but that gangrene must have actually commenced in the colon, before he acknowledged himself ill, otherwise it is impossible to account for the sphacelated state of the colon on dissection. The symptoms which attended the disease throughout, particularly the anguish and dejection of countenance, are always characteristic of a gangrenous tendency. Soldiers invariably endeavour to conceal their diseases, and they also frequently attempt to remove the pain which attends the first stages of dysentery, by drinking large quantities of rum.

OF CHOLERA MORBUS.

Cholera Morbus is a disease that occurs much more frequently in the East than in the West Indies, and as the author's experience in

tropical diseases was confined to the latter, he cannot speak much of it from actual observation; his notice of it therefore shall be very brief.

What we consider to be the pathology of this disease we have already stated. The characteristic symptoms are a discharge of bile both upwards and downwards; in fact, a continued vomiting and purging of bile or bilious matter, together with an excessive degree of exhaustion of vitality, the necessary consequence of such a commotion in the system, essentially constitute this formidable disease. From this view of its pathology and causes, the indication of treatment would appear to be to dilute the bile, so as to render it less irritating to the delicate surfaces with which it comes in contact; to prevent spasmodic contractions of the muscular structure of the stomach and alimentary canal; and to prevent general exhaustion of the system by supporting the principle of vitality.

To diminish the stimulating effect of the bile, tepid and diluting drinks should be given plentifully; but as their use may increase the vomiting, and consequently the degree of exhaustion, they should not be too long continued. The physical condition of the patient must determine the period of the dis-

ease when these diluting fluids should be discontinued, and stimulants given to support the system. When the patient becomes much exhausted, soups, broths, mucilaginous and farinaceous drinks, will be more advisable; as, besides sheathing from the stimulating bile the inner surface of the intestines, they will afford nourishment to the system and support the general strength.

To prevent spasmodic contractions of the muscular structure of the stomach and intestines, opium is the principal remedy. It lessens the sensibility of these important organs, and by that means restrains vomiting and purging. Besides, by supporting the action of the heart and arteries, which effect opium produces in an eminent degree, it obviates general exhaustion. The opium may be given internally, in the dose of twenty or thirty drops of the tincture, every hour or oftener if necessary, in soup or any other proper vehicle. It may also be used in the form of enema, or introduced by friction on the stomach and abdomen, should the irritability of the stomach prevent its being given internally. In fact, every indication we have mentioned will be promoted by a proper use of opium; and, combined with the regimen above recommended, it is on this medicine we must place

our chief reliance in the treatment of this disease.

Should the pulse flag, notwithstanding the use of opium, soups, fomentations, &c. and an increasing degree of exhaustion should seem to threaten a fatal termination; we should have recourse to other stimulants and cordials. Madeira wine and water, with sugar and nutmeg, a little warm, or compound tincture of cinnamon, or even strong brandy and water with nutmeg or cinnamon, sweetened and made warm, should be given according to circumstances. Nothing however but absolute necessity—that is, the fear that the patient should suddenly sink under the disease, should induce us to have recourse to these powerful stimulants, as inflammation of the bowels is much to be feared, after a violent attack of cholera morbus, and the use of stimulants will much increase the danger of the subsequent inflammation. Should the exhaustion of the patient however, at any period of the disease, indicate the necessity of stimulants, we should not hesitate to make use of them; as we still have it in our power, to prevent or arrest the progress of inflammation, by a decided use of the lancet.

OF HEPATITIS, OR INFLAMMATION OF THE LIVER.

The pathology and causes of hepatitis we have already considered; we shall now proceed to consider the symptoms and treatment of the disease. An attack of hepatitis is generally ushered in with the usual symptoms of fever: a full and hard pulse—hot and dry skin—head-ache—a white and furred tongue—urine high coloured—thirst, and loss of appetite. To these are added symptoms more immediately characteristic of the disease—fulness, tension and pain of the right hypochondrium. The patient feels as if the liver were tied to the parieties of the abdomen; and every muscular movement that deranges its position, occasions a lascerating pain, shooting from the liver to the shoulder of that side. The inflammation also frequently extends by continuity of membranous surface to the diaphragm and enveloping membrane of the lungs. The nerves distributed to the liver diaphragm and about the shoulder, having nearly one common origin, may perhaps be the cause of the sympathetic pain in the shoulder, which is a pretty constant symptom of hepatitis. A dry cough is also another symptom, occasioned, no doubt, by the extension of the inflammatory action to

the pleura pulmonalis. A singultus or hiccup is another pretty constant attendant, owing perhaps to the diaphragm being involved in the limits of the inflammation.

These symptoms will be more or less strongly marked, according to the degree of inflammation present. Where the inflammation is considerable, the fever runs very high—the pulse is hard and rapid—the eyes inflamed, and delirium frequently supervenes. When the lungs are deeply involved in the inflammation, the breathing becomes difficult and laborious, and the distension of the lungs during each inspiration considerably increases the distress of the patient, by putting on the stretch the inflamed membranes, and by pressing on the liver by the descent of the diaphragm and the action of the abdominal muscles. In some cases the patient lies with most ease on the right side, in others on the left. The cause of this is not easily conceived, the fact however is certain. In one of the most violent cases of hepatitis that has come under the observation of the author, the patient could not lie on the right side, but rested with comparative ease on the left—perhaps this difference is occasioned by the seat of the inflammation. Should the inflammation particularly affect the peritoneal coat and convex surface of the liver,

and extend to the diaphragm, there is reason to suppose that lying on the right side would increase the pain, as the expansion of the chest on that side being by these means prevented, the inflamed surfaces would be pressed against the bony parieties of the chest. But when the inflammation affects the substance of the liver, and extends perhaps to its convex surface, and to the ligaments by which it is connected with the right side, there is reason to believe that lying on the left side will increase the pain, by putting on the stretch the inflamed ligaments of the liver.

When, by some or the whole of the symptoms here enumerated, the existence of inflammation of the liver has been ascertained, we should immediately have recourse to the lancet. No recommendation of any remedy, and from whatever authority, should induce us to omit bleeding, nor even to postpone the operation in order to give a trial to any favorite or celebrated remedy.

Mercury has long been a favourite medicine in hepatitis, and by many it is thought to produce a specific effect on that disease; the nitro-muriatic acid bath has also had its supporters; but if we trust to either of them, for the reduction of inflammation in the beginning of hepatitis, we shall find ourselves egregiously

mistaken. That these remedies are useful, and one of them highly so, in certain stages of hepatitis, the author is well convinced by experience; but experience has also convinced him, that if either or both of them are trusted to, in the inflammatory stage, the consequences to the patient may be serious and even fatal.

It is on the lancet then we should place our chief reliance for the reduction of inflammation in hepatitis, as well as in every other inflammatory disease. The quantity of blood to be taken away will of course be determined by the habit and constitution of the patient, and the extent of the inflammation; but in general the quantity should be pretty considerable, in order to make a decided impression on the disease, and to arrest at once the progress of the inflammation. By a decided use of the lancet in the beginning of hepatitis, we not only prevent suppuration from taking place, but we also prevent the disorganization, too frequently occasioned by the effusion of coagulable lymph from the inflamed vessels of the liver. It is likely that had the lancet been more freely used in the inflammatory stage of hepatitis, instead of trusting to mercury, as is too frequently done, for the reduction of inflammation, fewer cases of organic obstruc-

tion of the liver would be met with in practice. It frequently happens that bleeding is either totally omitted, or a small and insufficient quantity of blood only is taken away, while mercury is introduced into the system in every form, and with the greatest rapidity, with the intention of bringing the system as soon as possible under its influence, on which it is imagined the safety of the patient altogether depends. This from experience we are convinced is an erroneous practice, and we are certain that mercury has no power of arresting inflammation generally; nor do we think it has any specific power on inflammation of the liver, although such would appear to be the opinion of many who rely on it entirely for the cure of hepatitis. Mercury has the effect generally of increasing vascular excitement by forcing its way into the minute vessels; and how this, its known and acknowledged effect, can be reconciled with its supposed power of removing inflammation of the liver, it is not very easy to conceive. In fact, from the general and acknowledged effects of mercury on the system, we should rather expect that it would increase than remove inflammation: and such we have reason to believe is very frequently the case, and that inflammation of the

liver is often aggravated, and perhaps suppuration induced, by the use of mercury during the inflammatory stage of the disease.

With respect to the nitro-muriatic acid bath, the author has given it an extensive trial, and with that care and attention to which it appeared entitled from the encomiums of other practitioners; but he cannot say that in any stage of the disease he has found it to produce any decided benefit; and in the first or inflammatory stage, he thinks it is as useless and as objectionable as mercury. Whatever may be the mode of operation of the nitro-muriatic acid bath, and whether its effects are specific, or are occasioned by its imparting oxygen to the system, it is certainly possessed of a stimulating power, which in a torpid state of the liver might, like mercury, be useful in restoring the vitality of the vessels; but in the inflammatory stage of the disease, must aggravate the symptoms of inflammation.

We have made these observations on mercury and the nitro-muriatic acid bath, because we are aware that too great a reliance on these remedies has prevented many from using the lancet in the beginning of hepatitis, and from a conviction that many patients have been injured by such an omission; but it is not intended to deny the utility of these reme-

dies, particularly of mercury, in the torpid and exhausted state of the vessels of the liver, which is occasioned by long continued excitement or succeeds to active inflammation: what we have here said only applies to their use during the inflammatory stage of the disease.

With respect to the extent to which blood-letting should be carried; if the symptoms of inflammation run high, forty, fifty, or even sixty ounces of blood, according to the habit and constitution of the patient, and also according to circumstances and the effect produced, may be taken from the arm at one bleeding. This quantity, together with a strict abstinence from stimulating diet, will generally arrest the progress of the inflammation. Diluting drinks, varied to the taste of the patient, will conduce to the same end. Rice water, barley water, toasted water, according to the inclination of the patient, should be frequently given. As every movement of the body which occasions muscular contractions, will also occasion vascular excitement, the most perfect stillness and quietude should be enjoined. The patient should be kept if possible perfectly motionless; and as the operations of the mind have also a great influence on the vascular system, every care should be taken to prevent the occurrence of agitating

circumstances. In fact, the object of treatment in so far as regards the patient himself, should be to suspend the excitement of mental and muscular exertion. He should not be allowed to make frequent attempts to ascertain what he might consider the easiest position, as every movement of the body will increase pain, and every thing which causes pain will certainly aggravate the inflammatory symptoms. For the same reason, we conceive, that the frequent attempts of some practitioners, to ascertain the seat of inflammation by violently laying hold of the liver below the ribs, or violently pressing against it with the hand, are highly injudicious and injurious. Such violent experiments cannot surely be necessary to satisfy the practitioner himself of the existence of inflammation, as the symptoms already mentioned must sufficiently characterize it: and if these experiments are merely made with a view of impressing the patient with a higher opinion of the sagacity of his medical attendant, by conveying to him, through the medium of sensation, an aggravated sense of his own sufferings, the motive is surely contemptible, and entirely unworthy of an enlightened physician. At all events, such experiments are unnecessary, and will certainly prove injurious

to the patient by increasing the symptoms of inflammation.

In addition to these remedies and regimen, acetated water of ammonia should be given in the dose of about half an ounce, three or four times a day; and should the inflammation extend to the lungs, and occasion cough, pectoral medicines may be combined with it, such as the almond emulsion with syrup of poppies, or a solution of gum acacia in hot water with the same syrup: a small proportion of antimonial wine may be added to either mixture. In every case, care must be taken to have the bowels well evacuated; for this purpose, pills composed of the blue mercurial pill and compound extract of colocynth in equal proportions, may be given, and assisted by a solution of some neutral salt; or, if convenient, by the Cheltenham waters; and these medicines should be repeated at proper intervals, so as to keep the bowels well evacuated during the whole treatment of the disease.

These remedies and regimen will in general remove the inflammation in a very short time; should it, however, as will sometimes happen, continue notwithstanding their use, particularly should spasmodic twitchings affect the patient, the bleeding should be repeated; and as often

as these spasmodic twitchings recur, the lancet should be again resorted to, whatever may be the state of exhaustion of the patient. This is the stage of the disease where the greatest judgment is required, as the pulse will be sometimes found to indicate cordials instead of blood-letting.

The author has seen a case where the convulsive or spasmodic twitchings were so very violent, that it was frequently apprehended that the patient would have died in one of these paroxysms. The pulse on these occasions was scarcely perceptible, and all the powers of life were equally enfeebled, so that it required the greatest confidence in the propriety of the remedy to have recourse to the lancet; yet in every instance the paroxysm was removed by bleeding, and the pulse became more distinct and regular after the operation. In this case, there was reason to believe that the diaphragm was involved in the extent of the inflammation, and although the quantity of blood taken away before the paroxysms ceased altogether was considerably more than an hundred ounces, the patient ultimately recovered.

It is of course impossible to know in any case what would have been the result of a mode of treatment different from the one

adopted, but there is certainly reason to believe that the case here mentioned would have proved fatal, had not bleeding been resorted to in the beginning of every convulsive paroxysm.

When the inflammation has been removed by the means here recommended, we may then have recourse to mercurials, not only to remove obstructions from the great ducts of the liver, but also to promote the absorption of any extravasation that may have taken place from the inflamed vessels, and which if allowed to continue might constitute organic obstructions. Mercury in this stage of the disease is also useful, by stimulating the vessels of the liver, debilitated and deprived of a portion of their vitality by the previous inflammatory excitement. Should this not be done, a torpid and inactive state of the liver might succeed, which, by preventing the necessary secretion of bile, would derange the functions of digestion.

In this stage of the disease, and to prevent the consequences likely to arise from a torpid state of the vessels of the liver, a small quantity of the blue mercurial pill should be given. About three grains of the pilula hydrargyri may be given two or three times a day, and to strengthen the organs of digestion, one grain

of colombo powder, or of some other bitter, may be added to each pill. These medicines will moderately stimulate the organs of the biliary system, and by preventing that exhaustion which might otherwise have been occasioned by the inflammation, and the remedies used for its removal, they will enable the liver to perform its functions.

Should the nitro-muriatic acid bath ever be useful, it is also in this stage of the disease, when the inflammation has been entirely removed by bleeding and the other remedies already recommended. We have already expressed opinions of the doubtful utility of this medicine, but as it certainly posseses some stimulating power, it may sometimes be found useful in the exhausted state of the vessels of the liver, and may be used on the same principles as mercury—either alone or in conjunction with that powerful remedy.

To prevent a relapse of hepatitis, we must endeavour to avoid the causes of the disease. What these causes are we have already sufficiently dwelt on in different parts of this work; we shall here merely repeat, that we should equally avoid exposure to the scorching heat of the sun, and to the chilling influence of the damp night air. This, together with temperate

habits, and exercise during the cooler parts of the day, will go a great way towards preventing a return of the disease; but should relapses notwithstanding frequently occur, a change to a more temperate climate will be the only effectual means of preventing a broken and shattered constitution.

A MORBID APPEARANCE OF THE HEART,

Occasioned by the influence of a Tropical Climate.

A DISEASE is mentioned in one of the reports from Trinidad, under the denomination of "Mal d'Estomac:" a morbid preparation of the heart of a patient, who died of that disease, was transmitted to the Army Medical Department by the author in 1817, and as it is well calculated to illustrate the effects of tropical climates on European constitutions, we shall here insert the observations with which it was accompanied; and with them we shall close the subject of tropical diseases.

"The preparation herewith transmitted is the heart of a man who died a most marked case of that disease, which has been called in this island "Mal d'Estomac," but which may be more properly considered the effect of a complication of disorders, inducing a chachectic habit and a broken constitution. A soldier at this station, after having had several attacks

of fever, remittent and intermittent, and probably several attacks of dysentery, after each of which his constitution had been visibly impaired, becomes of a pale and sallow complexion; his feet and legs swell, particularly in the evenings; his stomach and bowels are generally out of order; he has frequent palpitations, and walking up an ascent occasions a sense of suffocation. In the more advanced stages, his stomach rejects food; the cellular membrane over the body is distended with fluid, and being almost transparent, exposes to view a peculiar white adipose substance deposited in the cells of the cellular membrane. The breathing at length becomes more difficult, and the least exertion occasions a sense of faintness; the face is bloated, and the eyes haggard and ghastly; the pulse small and unequal. These aggravated symptoms are not present until after a patient has suffered from several attacks of disease; but a certain approximation to this state is observable after each imperfect recovery, and the constitution appears after each successive attack to be rendered less capable of effecting its own cure.

"Intemperance may be considered one of the principal causes of this disease, or rather of this complication of diseases; and when this change has taken place, the unfortunate

sufferer becomes more infatuated than ever with the love of ardent spirits. The uncomfortable sensation which he experiences in his stomach, he imagines is relieved by the stimulus of spirits; and as it probably produces some alleviation of both his mental and corporeal suffering, no consequences can deter him or prevent him from indulging in the most dangerous excesses.

"The most remarkable circumstance that presents itself with respect to this preparation, is its great want of muscularity, and the quantity of fat deposited about its base. The ventricles, instead of being firm and muscular, yield on pressure, and their sides close together like a pouch or membranous bag. The great want of muscularity is not now so evident in the preparation, as it appeared in the subject at the time of dissection. It has now been preserved during several months in strong spirits, or what have been called by the planters "high wines." The corrugating effect of the spirits has now given to the preparation some appearance of muscularity, of which at the time of taking it out of the subject it was entirely destitute.

"The following were the appearances on dissection of the subject to which this morbid preparation belonged. Surface of the body

white—cellular membrane distended with fluid, and almost transparent—an incision made along the inner side of the thigh with a scalpel, was followed by a copious discharge of a watery fluid—the cells of the cellular membrane filled with fat—a quantity of fluid between the dura and pia-mater—a preternatural quantity in the ventricles of the brain and base of the skull—the whole cavity of the thorax filled with water—the heart deprived of its muscularity—about an ounce of a yellow substance, of the consistence and appearance of jelly, in the right auricle—a quantity of dark-colored coagulated blood, in the same auricle—the liver indurated, and of the colour and consistence of new cheese.

"To deduce any consequences from this remarkable state of the heart, connected with cachectic diseases, appears difficult. It may however not be uninteresting to consider some of the principal causes which are supposed to occasion this deranged state of the system, and to see how far they are capable of producing the morbid changes above mentioned.

"The stimulus of spirits taken into the stomach occasions an increased action of the heart and arterial system, by which the blood is propelled into the extreme vessels, producing diaphoresis on the surface.

"The soldier, while under the influence of excesses, frequently exposes himself to the damp and cold chills of the night. The difference of temperature is very great at this station at different periods of the day and night. A soldier, under the circumstances above mentioned, who has been exposed during the day to a temperature of about 86 degrees, is particularly liable to be chilled by exposure to a damp and wet atmosphere of about 62, to which the thermometer generally sinks here at night, or about gun-fire in the morning. The impression of this damp and cold air on the surface, causes the blood to retire from the extreme vessels to the heart and other internal organs. The blood driven on these organs occasions a local re-action, and the watery part of it being carried off by the exhalents, a more inflammatory diathesis is occasioned. Is it not probable that this excessive action of the heart, occasioned and continued by the causes above mentioned, and directed on itself by the re-action on the surface, is the cause of the destruction or absorption of its own muscular structure?

"I have seen, in some subjects that had died of this disease, a layer of coagulable lymph, connecting the surface of the heart to the pericardium so firmly, that it required a

considerable degree of force to separate them. This circumstance would appear to afford a proof of the previous existence of inflammation of the heart; for, although this lymph might have been effused from the vessels of the pericardium, we can scarcely suppose the existence of inflammation of the pericardium, without its having extended to the organ it surrounds.

"By whatever process the muscularity of the heart is destroyed, the fact of its being so is proved by this preparation.

"The first impression suggested by its appearance, on dissection, was surprize that a heart so destitute of muscularity, could have given to the blood the impetus necessary to carry on the circulation. The heart, thus deprived of its muscular structure, is unable to propel the coloured part of the blood into the extreme vessels; the consequence of which is, that transparency of the skin and cellular substance remarkable in this disease. The languid circulation is probably the cause of the great deposition of fat which takes place in the cellular membrane over the whole surface of the body, and gives to the skin that white and flabby appearance.

"With respect to the gelatinous substance and coagulated blood found in the right auricle,

I can only hazard a conjecture. From the languid action of the heart in the last stages of the disease, it is probable that, during its dilatation, the auricle could not completely empty itself of the whole of the blood received from the cavæ, but that a certain portion remained in contact with its sides, which was afterwards increased by the accession of more, as the circulation became more languid. And that the gelatinous substance was formed by the decomposition of the stagnant blood, or by the natural heat of the heart occasioning decomposition."

Finis.

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